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MILITARY AFFAIRS

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MILITARY-POLITICAL ISSUES

WEST BLAMED FOR OBSTRUCTING ARMS CONTROL AGREEMENT

Moscow MIROVAYA EKONOMIKA I MEZHDUNARODNYYE OTNOSHENIY in Russian No 1, Jan 81
(Signed to press 6 Jan 81) pp 52-61

[Article by G. Yevgen'yev: "The Vienna Negotiations and the Struggle for Detente in Europe"]

[Text] More than seven years have passed since diplomatic and military representatives of 19 states began negotiations in the capital of Austria, Vienna, concerning mutual reduction of armed forces and armaments in Central Europe. During this time more than 250 plenary sessions and a large number of unofficial meetings have been held. These have resulted in mutual understanding regarding certain aspects of future agreements. But, because of the positions of the NATO states, the Vienna forum has not yet entered its most important and responsible stage--the development of a draft of the future agreement.

In the current complex international situation, when aggressive circles of the United States are trying to increase tension and impose another, more costly and dangerous extension of the arms race on the people, it is especially important to step up efforts towards directed toward consolidating peace and security of states, eliminating the threat of a nuclear catastrophe and taking effective steps in the area of disarmament.

It was precisely this insistent need of the moment that was the focus of the appeal of the May (1980) conference of the Political Consultative Committee (PKK) of the states participating in the Warsaw Pact directed to state leaders, governments, parliaments and all social forces of the world to exert efforts to limit and curtail the arms race with the aim of rapidly reaching an agreement, and to immediately resume negotiations concerning those areas in which they were halted or broken off.

It is especially important to take decisive action in those negotiations concerning arms limitation where the positions of the participating states have come closer together as a result of the work that has been done and where the main thing that is required is the political will of the governments for their successful completion. This pertains particularly to the Vienna negotiations concerning mutual reduction of armed forces and armaments in Central Europe. The socialist states that were represented in the negotiations in Vienna are proceeding from the idea that all the necessary prerequisites for agreement have been met.

The representatives of the 19 participating states have clear reference points--co-ordinated decisions adopted in preparatory consultations which were approved by their governments. They include: the subject of the negotiations--mutual reduction of armed forces and armaments and measures related to this in Central Europe; the region of reduction, within which all measures developed in the negotiations must be implemented--the territories of the FRG, Belgium, Holland, Luxemburg, and also the GDR, Poland and Czechoslovakia; the states directly participating in the negotiations, troops and arms that are subject to reduction and limitation within this region¹; and the principles for further agreements--reciprocity and protection of the security of any of the parties.

The objective realities that were brought to light by the Vienna negotiations, and above all the incompatibility of the dangerous concentration of immense masses of troops and arms in Central Europe with the requirements of a really reliable security under the conditions of the nuclear missile age are now becoming even more pressing and critical because of the large-scale military preparations of the United States and other NATO countries, especially in the area of medium-distance nuclear weapons. Any military conflict in this region, taking into account the proximity of the armed groupings of the two military and political alliances, could spread to other parts of the continent and involve all of Europe in the conflagration--and not just Europe.

The states represented at the table of the Vienna negotiations are called upon to make a weighty contribution to the implementation of the points of the concluding document of the general European conference, and primarily to fulfill commitments to exert efforts directed toward reducing military opposition and toward contributing to disarmament, which is meant to promote political detente in Europe and strengthen its security.

Taking these circumstances into account, it would seem that there should be no special difficulties in reaching mutually acceptable agreements in Vienna. But the negotiations have been continuing for more than seven years now and so far they have not brought any appreciable positive result. What is the reason?

The main thing, undoubtedly, is the fact that since the very beginning of the negotiations the NATO countries have held an unconstructive and frequently simply obstructive position regarding the key issues under discussion. They are pursuing a goal which is incompatible with the interests of European security--to achieve unilateral military advantages, and to assure for themselves conditions for the curtailment which would essentially give them a free hand in implementing the long-term armament program adopted at the North Atlantic block and at the same time rigid limitations on armed forces and armaments of the parties of the Warsaw Pact.

In their first proposals the Western participants formulated the concept of the so-called "asymmetrical," that is, unequal, reduction of infantry troops of both sides in the region that was agreed upon. As a result, the four states of the Warsaw Pact--the USSR, the GDR, Poland and Czechoslovakia--were actually meant to reduce their forces by more than three times more than the seven NATO countries--the United States, Great Britain, the FRG, Belgium, Canada, the Netherlands and Luxemburg. For example, even in the first stage the Soviet Union was to remove from Central Europe an entire tank army consisting of 68,000 men and 1,700 tanks in exchange for the

removal of small subdivisions, individually and without any military equipment and the arms of 29,000 American servicemen. Poland, whose population amounts to approximately half of that of the FRG, and whose army is correspondingly smaller than the West German Bundeswehr, according to Western estimates, was to have reduced the number of military servicemen by 40 percent more than the FRG would.

Trying to justify their claims for unilateral military advantages in the eyes of Western public opinion, representatives of the NATO states assert that in the Central European region the countries of the Warsaw Pact have some "significant superiority" in the number of infantry troops. According to their statements they amount to almost 150,000 men. Allusions are made to "serious differences" in the structures of the armed groupings that are opposing one another here.

But arguments of this kind do not square with the facts. Although there are certain differences in the structures of the armed forces as a result of the fact that each side has developed them in its own way, in fact this does not play a significant role because both sides have been approximately balanced for a long time. "The differences in the structures of the forces of each of the sides," emphasized L. I. Brezhnev, "are approximately equal to one another in the end."²

It should be noted that the existence of military equality between the NATO states and those of the Warsaw Pact was discussed by none other than the President himself, J. Carter (during the high-level American-Soviet meetings in 1979). In the annual report to Congress of the U.S. Defense Minister, J. Brown, which was published at the end of January 1980, it was also pointed out that in the region of Central Europe, there is "an approximate numerical equality" between the regular armed forces of NATO and of the Warsaw Pact.³

In following tactics of deliberately dragging out the development of practical agreements, the Western participants allude to the notion that further progress depends on the coordination of the numbers of military personnel of both sides in Central Europe. But they themselves are undermining this coordination. Representatives of the NATO countries insist in using their inflated and in no way substantiated estimates of the number of troops of the socialist states as initial data for determining the volumes of reductions. They refuse to give a reasonable answer to the question of the method by which these "data" were obtained.

The extremely doubtful nature of Western estimates is demonstrated by their evolution itself. In fact while at the beginning of 1973 (when preparatory consultations were taking place in Vienna) the number of troops of the socialist states was officially determined by Washington at 730,000 men, as the beginning of the negotiations came closer the new figure was 850,000 men and a couple of months later, in November of 1973, the Western countries set this figure at 925,000 men. Thus in less than a year the Western estimate jumped by almost 200,000 men, and during the course of the negotiations--by another 50,000, although, as we know, the number of infantry troops of the socialist states remained the same.

The way the NATO countries inflated the actual number of armed forces of the states participating in the Warsaw Pact in Central Europe is alike in nature to the way they periodically proclaim that "the United States is behind in bomb-carrying aviation" or "behind in missiles" in the interests of increasing military expenditures.

All this leaves no doubt that the West is using the "figure discussion" of many years in order to camouflage its lack of desire to bring the matter to a concrete agreement.

The exchange of official data made in 1976 in Vienna by representatives of both sides showed that the overall number of armed forces of the NATO countries in Central Europe amounted to 981,000 men (including 791,000 infantry troops), and of the states of the Warsaw Pact--987,300 men (805,000 of them being infantry troops). The exchange made in the 21st round of the negotiations of updated figures concerning the number of troops directly participating in this region as of 1 January 1980 again confirmed that both sides have approximately the same number of armed forces personnel there. Moreover, with the completion of the withdrawal of 20,000 Soviet military servicemen from the GDR by 1 August 1980 the actual number of armed forces personnel of the socialist states in Central Europe decreased correspondingly. At the same time the number of troops of NATO states that directly participated in the negotiations, primarily the United States, increased.

In the specific conditions of the Central European region an effective reduction of the high concentration of troops and armaments can be achieved only under the condition that all participating states make an actually reciprocal and equal contribution to the reduction, that they reduce their armed forces and armaments within the time periods agreed upon and by amounts that are commensurate with their military potential in the given region. This is precisely what was envisioned by the developed draft of the agreement submitted by the USSR, the GDR, Poland and Czechoslovakia on 8 November 1973--to reduce armed forces and armaments on a reciprocal basis, including nuclear arms by approximately 17 percent during 1971-1977. If the West had taken a constructive approach a large step would have been taken several years ago in the direction of reducing the military potentials in the center of our continent. The overall reduction would have amounted to about 300,000 military servicemen, thousands of tanks, hundreds of aircraft and a large quantity of other military equipment. Part of the immense burden of military preparations which the people have to bear would have been removed from their shoulders.

During the process of the negotiations the socialist states made significant efforts in the interest of bringing the positions closer together. They advanced a whole number of initiatives directed toward achieving a compromise, particularly the proposals of 8 June and 30 November 1968 and 28 June 1979. Taking the desires of the West into account, the socialist states declared their readiness to reduce only the number of infantry troops with a simultaneous establishment of an upper limit of the level of numbers of airforce personnel of both sides and to carry out a reciprocal reduction of troops and armaments in two stages so that in the first stage only the Soviet Union and the United States would reduce the number of troops, in proportion to their present numbers in this region. Then the reduction would have been carried out on a selective basis as the Western participants suggested. The socialist countries were in favor of arranging it so that equal collective levels of numbers of armed forces would be established as a result--900,000 men for each side, including 700,000 infantry troops.

At the same time the plan of the socialist states retained the key elements of their principle approach, including: the adoption by all direct participants in the negotiations of the corresponding commitments regarding the reduction of their troops and armaments in proportion to or commensurate to their military potential; and the

establishment of an effective mechanism for maintaining equal collective levels of the number of troops of both sides after the completion of the reductions which would apply to all participants.

The proposals advanced by the socialist states are based on principles of reciprocity and equality of contributions of both sides to the future reduction and limitation of troops and armaments in this region and the proper accounting for the legitimate interests of security of all states participating in the negotiations. In no stage of the Vienna negotiations did the socialist states demand that the NATO countries make contractual commitments which they themselves were not prepared to make.

Moreover the socialist countries are already making a significant contribution to military detente in Central Europe. The Soviet Union has implemented a decision made in October 1979 after consultation with its allies concerning unilateral removal of 20,000 military servicemen, 1,000 tanks and a considerable quantity of other military equipment from the GDR, that is directly from the region being discussed in Vienna, to its own territory.⁴ As the updated figures showed, other socialist states have not increased the number of their armed forces.

As emphasized in the Warsaw Declaration of the PKK, the socialist states participating in the Vienna negotiations are prepared to continue in the future to exert efforts to find solutions which, without impairing the security of any one of the sides, would lead to a reduction of the level of military opposition in Central Europe. But such efforts are inadequate if they are one-sided.

Moreover the proposals from Western participants of 20 December 1975 to the socialist states made impossible demands regarding the volumes and the policy for reduction and the subsequent limitation of their troops. Moreover, while previously the direct Western participants agreed to include in the agreement for the first stage a commitment (if only of a general nature) to the effect that in the second stage they would reduce the number of their infantry troops by the volume necessary for achieving a collective ceiling of 700,000 men, their subsequent proposals did not envision contractual commitments concerning the reduction of troops belonging to six of the seven Western states that were participating directly in the negotiations. This change was brought about by a desire exempt from the troop reduction the FRG, Great Britain, Canada, Belgium, Holland and Luxemburg, which accounts for three-fourths of the contingent of NATO armed forces in Central Europe. But it is quite obvious that if these states do not make precise and clear legal commitments regarding the reduction of their troops, even if in the second stage, then the actual participation of the West in the reduction of the military potential will be nothing more than a fiction.

Previously the West European countries and Canada expressed their readiness to freeze the overall number of their troops in Central Europe as soon as an agreement could be reached concerning reducing the number of troops of the USSR and the United States in the first stage. But in keeping with the December document they no longer intend to take on any contractual commitment regarding freezing the number of their troops between the two stages of reduction. It turns out that the Soviet Union, which has approximately half of the overall number of troops of the countries of the Warsaw Pact in this region, was to have taken on contractual commitments to reduce and subsequently limit infantry troops in Central Europe while the West European countries, primarily such militarily powerful states as the FRG and Great Britain,

did not bind themselves to similar commitments and retained the possibility of increasing their armed forces in Central Europe.

The West also abandoned the positions it held previously with respect to such a key issue of the Vienna negotiations as the reduction and limitation of armaments and military equipment. At the end of 1975 the NATO countries agreed, as a "one-time measure," to reduce 1,000 American nuclear warheads and also 36 Pershing-1 launching installations and 54 F-4 aircraft carriers. This proposal is now being withdrawn.

Western propaganda is trying to justify such a step by referring to the fact that in December 1979 the U.S. government declared its intention to unilaterally remove from Europe 1,000 units of nuclear ammunition. But up to now nothing is known either about the quantity or about the types of nuclear ammunition that are to be removed directly from the region of Central Europe. Yet, according to estimates of a number of American military experts, the supplies of nuclear ammunition in Europe (according to official data, more than 7,000) greatly exceeds the needs of NATO and they could be reduced without detriment to the security of the countries of the West. Thus, for example, in the opinion of the former U.S. assistant defense minister, A. Enthoven, the North Atlantic block needs no more than 1,000 warheads for "containment." P. Warnke who in the recent past held the post of chief of the Agency for Disarmament and Arms Control pointed out that several hundred units of nuclear ammunition would suffice for the same purposes.⁶

Finally, the unilateral step of the United States can not be regarded separately from a simultaneous NATO decision concerning the production and development of about 600 new, more powerful medium-distance nuclear rockets on the territory of a number of West European states, including the region under discussion in the Vienna negotiations.

Refusing, in keeping with its December plan, to reduce arms and military equipment, the Western participants expressed consent only to refer in the agreement concerning the first stage the possibility of considering the issue of arms in the second stage of the negotiations. Yet it is clear that negotiations concerning reducing military opposition in the center of the European continent will not be effective if arms and other military equipment which comprise the main potential power of modern armed forces are not included within the framework of the future agreement.

In this connection one can not but agree with the following conclusion of the West German researcher, D. Senghaas: "Only an agreement which includes all components of the military machine and effectively precludes all possibilities of compensation or replacement can, taking into account the experience of past years, be considered to be an agreement in the area of control of arms that retards the dynamics of armament and leads to an effective curtailment of them."⁷

A reduction of armaments and military equipment is necessary in order to raise the first barrier on the path to an unrestrained arms race on the European continent. As for the socialist states, as was again confirmed at the conference of the PKK in Warsaw, there is no kind of armament which they would not be prepared to limit or curtail on a reciprocal basis.

As usual the NATO countries are not only against including in the reductions the air forces which are an extremely powerful and highly mobile form of armed forces, but they even refuse to establish an upper limit for the level of the air forces within the framework of general equal levels of numbers of armed forces of both sides. It is precisely this form of armed forces that is to perform the major function in the development of new American medium-distance nuclear missiles.

While insisting as usual on the establishment of national limitations for Soviet and American troops, the West at the same time is against the development of an effective mechanism for maintaining equal collective levels of troops which would regulate the number of troops of individual states without allowing them to increase in the future when the agreement concerning the second stage goes into force.

On the whole one can not avoid the conclusion that the December plan of the NATO states reflected a clear decrease in their interest in achieving in Vienna a general agreement which would satisfy both sides and would not impair anybody's security. The positions of the Western countries reflect more and more clearly the tendency to try, through various far-fetched proposals, to reduce the many years of efforts for developing this agreement to a reduction of only Soviet and American infantry troops in Central Europe. The volume of troop reduction which the troop reduction is prepared to make now is becoming less and less significant than it was in preceding "schemes." Instead it is suggested that the socialist states, in addition to a large reduction of USSR troops, accept an inflated package of "concomitant measures," and these measures are intended to apply to the daily activity of the armed forces of the socialist states not only in the region of Central Europe, but also far beyond its borders, including a significant part of the European territory of the USSR.

Thus the updated variant actually implies the notorious concept of control of armed forces and arms without disarmament--a concept, as we know, which amounts to a gathering of information and investigatory nature about the military potential of the Soviet Union.

Among the measures advanced by the West was preliminary notification of any troop movement outside the garrisons, beginning with the division formation. If one keeps in mind the considerably smaller number of personnel in the divisions of the states of the Warsaw Pact, it becomes clear that such a procedure would place the later in a disadvantageous position in comparison to the NATO countries. They also suggested such steps as exchanging observations of military training, conducting periodic ground and air inspections, exchanging detailed military information about the number of personnel and the organizational structure of the troops, and creating permanent points where troops can enter and exit from the zone of reductions. The majority of these measures are not directly related to a reduction of armed forces and armaments, which runs counter to the decision agreed upon in the preliminary consultations.

As is clear from secret documents of the North Atlantic block published in the GDR press in May 1980, the NATO countries, by advancing in the Vienna negotiations a broad complex of measures that do not pertain to the reduction of arms and military equipment, are striving primarily to obtain information about the structure, armaments, equipment and military preparedness of the armed forces of the Warsaw Pact states. Thus in one of the documents it is openly declared that as a whole these

measures are to assist NATO intelligence services with a global evaluation of the actions of the Warsaw Pact and its probable intentions, which would help to make the necessary decisions.⁸ It is quite obvious that these proposals from the NATO countries can not be considered compromises. They not only do not contribute to progress in the negotiations but, on the contrary, create additional obstacles to the development of mutually acceptable agreements.

The evermore clearly revealed desire of the NATO countries to avoid the agreed-upon subject of the Vienna negotiations--the consideration of the key issues of reduction and limitation of troops and armaments--is not unexpected. Suffice it to recall the statement of the American senator, S. Nunn, one of the main champions of increased military might for NATO in Europe. "I think," he said, "it has long been time to change the main focus of attention in the negotiations (in Vienna--G, Ye.) from a reduction of existing armed forces in Central Europe to the prevention of the sudden and unexpected use of them More specifically this means the creation of an all-embracing system of measures involved in reduction which are based on permanent and all-embracing verification in the locations in Europe. This would provide precise knowledge of any indications of military activity."

This is also the viewpoint held by L. Gelb, who occupied the post of director of the administration for military and political problems of the State Department. He also recommended that the agreement in the Vienna negotiations be reduced to a symbolic reduction of Soviet and American infantry troops by 20,000 and 10,000 men, respectively, and instead of taking, in his terms, "large steps" to agree on points for the entry and exit of troops into the Central zone, and prompt notification of large troop training sessions conducted outside the garrisons and the organization of inspection groups.⁹ The West German general Steiff betrayed the same spirit when he was the senior military advisor of the FRG delegation in the Vienna negotiations for six years. He advises transferring the center of gravity of the negotiations to "concomitant measures, which have been applied to a sufficiently large region."¹⁰

The socialist states participating in the Vienna negotiations are attaching the appropriate significance to measures related to reductions, considering them as a means of providing for strict fulfillment of commitments made by all participants in the future agreement. The principle approach of the socialist states consists in the approach that the volume of these measures should correspond to the nature of practical steps for reducing troops and armaments, should be applied from the very beginning to the troops of all direct participants, and should embrace the entire region of Central Europe where the reductions take place.

If the NATO countries are really interested in spreading military detente to other regions of the country, say, in developing measures to promote trust regarding them, then these issues could be considered at the conference on questions of military detente and disarmament in Europe which have been proposed by the socialist states. In particular, the states of the Warsaw Pact have advanced an initiative concerning refraining from being the first to use both nuclear and regular arms against one another, and they have also suggested concrete measures for reducing military operation and strengthening trust, at the Warsaw Conference of the PKK in May 1980 and previously at the Berlin meeting of the committee of foreign affairs ministers of the states in December 1979.

An important prerequisite for concluding agreement concerning reduction of troops and armaments could be an agreement not to increase or to freeze the number of troops by both military and political alliances in Central Europe for the period of the negotiations. Such a measure, which the socialist states proposed as early as 1974, does not require any additional agreements or the development of conditions and procedures for reducing troops and armaments. At the same time its adoption would undoubtedly strengthen military stability in the center of Europe and would facilitate searches for other areas of agreement. Incidentally, many sober thinking representatives of Western countries agreed with this. In particular, the chairman of the senate committee on foreign affairs of the U.S. Congress, P. Church, noted: "For example, what convincing arguments can be made against the proposal to freeze the armed forces of the countries participating in the Vienna negotiations concerning the reduction of forces and armaments in Central Europe during the period when these negotiations are underway? None."

The West's current negative position concerning many of the high points of the Vienna problems is organically related to the overall line of the NATO countries toward changing the existing balance of military forces on the European continent in their favor and toward achieving military superiority over the soviet states. Such actions on Washington's part as the artificial postponement of the ratification of the SALT-II agreement, its decision to freeze disarmament negotiations in a number of areas and the immense increases of U.S. military expenditures do not contribute to the Vienna negotiations.

In the Pentagon program a very important place is allotted to military preparations in the Central European region. They plan not only to locate here a large part of the new medium-distance nuclear arms of the United States (the Pershing-2 and winged missiles), but also, by the end of 1982, to store supplies of arms and military equipment for three additional "double based" American divisions that are intended to be transferred to the European continent. Other measures are also being taken to increase the American military presence in Central Europe. During the period from 1966 through 1977 alone, that is in the course of the negotiations, the Pentagon sent an additional 26,000 servicemen to the FRG. So, on the one hand, the United States is conducting negotiations concerning the reduction of troops and armaments, and on the other, is carrying out military preparations in full force in that same region that is being discussed in Vienna.

In the autumn of 1980 on the territory of a number of Western European NATO countries, including those in the zone of the future agreement, there was a wave of military manouvers under the general code name of "Autumn Forge," with the participation of many tens of thousands of men, thousands of tanks, hundreds of aircraft and a large quantity of other military equipment. It goes without saying that the scale of these military measures conducted in the direct proximity of the socialist states as well as their direction run counter to the goals of the Vienna negotiations and the spirit of political and military detente.

One can not but be alarmed by the long-term plans for increasing the military might of the main component of the armed grouping of the North Atlantic block in Central Europe in terms of numbers and supplies of ordinary means of waging war--the West German Bundeswehr. According to data given in a speech by the FRG defense minister, H. Apel, of 7 March 1980, during the 1980's it is planned to fully re-equip the

Bundeswehr with the new generation of military equipment.¹¹ Extensive military preparations are being made in other NATO countries as well, including those which have troops in the region embraced by the Vienna negotiations. And these measures reveal with all clarity the true reasons why the West is stubbornly striving not to include armed forces and also armaments and military equipment of Western European countries and Canada within the framework of the reductions.

Naturally the question of the participation of these countries in the freezing of the number of military personnel between the two stages and reducing their armed forces and armaments in the second stage is one of the key issues at the present time. Without a satisfactory solution to this problem it is impossible to ensure a balance of interests of the security of all participating states. One can not take effective steps in the area of military detente in Central Europe without including measures for reduction and limitation of troops and armaments of those states whose territories immediately form the area of reduction. The directly participating socialist states located here--the GDR, Poland and Czechoslovakia--are prepared along with the reduction of Soviet and American troops and arms in the first stage to take on the corresponding contractual commitments concerning the reduction of their troops and armaments in the second stage and to freeze the number of their troops between the two stages. But they will do this, of course, on the basis of complete reciprocity under the condition that the direct Western European participants will take on similar commitments.

The governments of the Western states, mainly the United States, the FRG and Great Britain, have more than three-fourths of the total number of infantry and air force personnel of the NATO countries in Central Europe and they have a large responsibility for bringing the Vienna negotiations out of the blind alley into which they led it by their unrealistic intentions to obtain unilateral military advantages at the expense of the security of the socialist states.

The peaceful future of the European continent is being arranged today. It will depend to a considerable degree on the results of the negotiations in Vienna.

The Soviet Union and other socialist states, by following a principled course toward military detente in Central Europe, is contributing in all ways to the achievement of practical results in the Vienna negotiations. Following this course, the Soviet delegation, headed by the General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, L. I. Brezhnev, advanced a number of new ideas and proposals at the Moscow negotiations with leaders of the FRG in June 1980. They include concrete ideas about what should be done to develop agreements in Vienna so that the Vienna negotiations will proceed more actively and constructively.

On 10 July 1980 the Soviet Union and other socialist states participating directly made new suggestions that contribute to the development of an agreement for the first stage.¹² They envision a reduction of 13,000 Americans (that is, precisely the quantity that was indicated by the West itself at one time) and 20,000 Soviet military servicemen (along with the military contingent of 20,000 which the Soviet Union has already removed from the GDR). Moreover, the socialist countries have expressed their readiness to proceed toward the creation of a mechanism for maintaining collective levels of armed forces of NATO and of the Warsaw Pact in Central

Europe whereby the number of troops of each of the states directly participating would not exceed 50 percent of the equal collective level of 900,000 for each of the alliances.

In order to advance the negotiations and bring the positions of the two sides closer together, the Soviet delegation on 13 December 1980 made new proposals on behalf of the socialist countries directly participating in the negotiations--the GDR, Poland, Czechoslovakia and the USSR. If the West takes a constructive attitude toward the July initiative of the socialist countries, they have expressed their readiness, within the framework of the first agreement, to proceed toward a collective "freezing" of the number of troops of other direct participants in the negotiations, besides the USSR and the United States, for the period between the two stages of the reductions. This step has the nature of a compromise. It takes into account the position of the Western countries which are interested in refraining from establishing individual limitations on the number of troops of the direct participants. Thus a real possibility opens up for an accelerated solution to this problem.

The new initiatives of the soviet states are far-reaching in nature. They are dictated by the obvious desire to facilitate the search for mutually acceptable results. Now the Western participants must take an adequate step in response.

FOOTNOTES

1. Recall that the direct participants in the negotiations include states whose territories are part of the regions of the reductions and also states that have troops here. They include: the USSR, the GDR, Poland and Czechoslovakia, on the side of the socialist countries; and the United States, Great Britain, the FRG, Belgium, the Netherlands, Canada and Luxemburg, on the Western side. Direct participants have the right to adopt decisions. The remaining participants in the negotiations whose territories lie beyond the region under discussion are Bulgaria, Hungary, Romania, and also Italy, Greece, Turkey, Denmark and Norway. They have a special status.
2. L. I. Brezhnev, "Leninskii kursom. Rech'i i stat'ii" ["A Leninist Course. Speeches and Articles"], Vol 6, Moscow, 1978, p 138.
3. See "Report of the Secretary of Defense H. Brown to the Congress on the Fiscal Year, 1981 Budget, January 29, 1980," Washington, 1980, p 112.
4. See PRAVDA, 1 August 1980.
5. See COEXISTENCE, Vol. 17, p 26.
6. See "Nuclear Weapons and Foreign Policy Hearings," Washington, 1974, p 57.
7. BULLETIN FOR PEACE PROPOSALS, 1979, p 16.
8. See Document c-m (78) (NATO-secret); Document ac/276-d (79) 1 (NATO-secret).
9. See FOREIGN POLICY, Fall, 1979, p 25.

10. EUROPAISCHE WEHRKUNDE, No 1, 1980, p 6.

11. See BULLETIN DES PRESSE -- UND INFORMATIONSAMTES DER BUNDESREGIERUNG, 11 March 1980, p 215.

12. See PRAVDA, 11 July 1980.

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MILITARY SCIENCE, THEORY, STRATEGY

CARPATHIAN OPERATION IN WW II DESCRIBED

Moscow KRASNAYA ZVEZDA in Russian 3 Feb 81 p 4

[Article by Maj Gen (Res) I. Karpov: "Across the Carpathian Mountain"]

[Text] Dear Editor:

We are serving in those places where the Eastern Carpathian Offensive Operation took place more than three decades ago. Please tell us about it on the pages of KRASNAYA ZVEZDA.

Capt K. Shchanov
Red Banner Carpathian Military
District

The Eastern Carpathian Offensive Operation was one of the memorable stages in the combat journey of the Soviet Army during the years of the Great Patriotic War. It was conducted by the forces of the 1st Ukrainian Front (its commander was Marshal of the Soviet Union I. S. Konev) and by the forces of the 4th Ukrainian Front (its commander was General of the Army I. Ye. Petrov) in cooperation with the 2d Ukrainian Front (its commander was Marshal of the Soviet Union R. Ya. Malinovsky).

The following task faced the Soviet forces: Having completed the liberation of the Western Ukraine and southeast Poland, destroy the enemy in the foothills of the eastern Carpathians, cross them and move into the Sredne-Dunayskaya lowlands in order to extend a friendly helping hand to the people of the Transcarpathian Ukraine and Slovakia.

The task was a complicated one. The almost impassable terrain in the Carpathians simplified the enemy's defense and extremely complicated the conduct of the offensive by our forces. The Hitlerites had created a network of permanent structures in the foothills and in the passes through the Carpathian mountain range where the operations of our forces were assumed.

The passes along paths and river and stream valleys and on the slopes of the Carpathians were covered with engineer obstacles.

The offensive of our forces was first developed on a narrow sector in the direction Krosno-Dukel'skiy Pass. The width of its zone was expanded throughout the entire

extent of the eastern Carpathians. As a result, the operation acquired a great deal of strategic importance. Two interconnected operations were defined in it -- the Karpatsko-Duklinskaya and the Karpatsko-Uzhgorodskaya. The forces of the 38th Army (its commander was Col Gen K. S. Moskalenko) and the 1st Czechoslovak Army Corps (its commander was Gen L. Svoboda) of the 1st Ukrainian Front in cooperation with part of the forces of the 1st Guards Army (its commander was Col Gen A.A. Grechko) of the 4th Ukrainian Front carried out the Karpatsko-Duklinskaya Operation. Shifting to the offensive on 8-9 September 1944, they breached the enemy defense. Right after them, the main forces of the 1st Guards Army entered the battle on the Uzhgorodskoye Avenue. On 11 September, the 17th Guards Rifle Corps which was subordinate to the front and commanded by Maj Gen A. I. Gastilovich shifted to the offensive on the Rakhovskoye Avenue. On 18 September, the 18th Army commanded by Lt Gen Ye. P. Zhuravlev began combat operations. The Karpatsko-Uzhgorodskaya Operation had begun.

The Soviet forces smashed the impregnable -- as the enemy command thought -- defensive positions of the Hitlerites. On 20 September 1944, the 3d Mountain Rifle Corps and the 129th Guards Rifle Division, who had experience in conducting combat operations in the mountains of the Caucasus and the Crimea, in Little Land, and in the heroic El'tigensko-Kerchenskyy assault, moved to the Polish-Czechoslovak border and conducted an offensive on the territory of Slovakia. By 1 October, the troops of the 38th and 1st Guards armies and the 18th Guards Rifle Corps of the 18th Army had moved to the Polish-Czechoslovak border and had crossed it in many places. The 17th Guards Rifle Corps also conducted successful combat operations. Its units had crossed the Soviet-Czechoslovak border by this time.

The entry of Soviet forces onto the territory of friendly Czechoslovakia attached an even wider scope to the anti-fascist struggle of the Slovak and Transcarpathian partisans and people. They intensified the blows against the occupiers and their local minions. The workers of the liberated regions actively assisted our forces in the construction and repair of roads and bridges and took care of wounded fighting men.

The 95th Rifle Corps and a number of independent mobile detachments of the 18th Army went on the offensive on a broad front -- more than 120 kilometers -- on 23 September on the Mukachevskoye Avenue. They seized the population center of Lavochnoye in L'vov Oblast on 30 September 1944. The enemy especially increased his resistance on the approaches to the Soviet-Czechoslovak border in the area of the Uzhokskiy Veretskiy and Vyshkovskiy passes. However, nothing could stop the Soviet forces. By the end of 1 October, the army units and large units of the 95th Rifle Corps of the 18th Army had moved to the Soviet-Czechoslovak border along the entire front.

And so the September offensive of the forces of the 1st and 4th Ukrainian fronts ended with the complete destruction of the large enemy grouping in the Carpathian foothills. The territory of Soviet Ukraine was thereby completely liberated. On 1 October 1944, the chief of the political section of the 18th Army, comrade L. I. Brezhnev, proudly reported for his fighting comrades to the front's political directorate: "In connection with the fact that our control has reached the state border with Czechoslovakia across the entire front and in separate sectors has crossed it, work is being conducted with the men to prepare for battles in Transcarpathia."

An even more difficult task faced us during the next stage of the operation (1-17 October). The Soviet forces had to smash the enemy's fortified defense system in Carpathian Czechoslovakia. It was necessary to drive him from the Carpathian heights. It was necessary to solve this task without any delay so that the enemy would not be able to consolidate his positions. The Soviet and Czechoslovak fighting men were well aware that the rapid destruction of the Hitlerites in the eastern Carpathians would be a direct help to the partisans and insurgents of Slovakia and Transcarpathian Ukraine who were waging an unequal battle against the fascist occupiers and their underlings.

After a short preparation, the forces of the 4th Ukrainian Front shifted to a general offensive on a broad front. By breaking the enemy's resistance, skilfully maneuvering on the battlefield, and boldly bypassing his strong points from the flanks and rear, they crossed the main Carpathian range on 17 October and moved to the southern and southwest slopes of the Carpathians. The 17th Guards Rifle Corps, having seized the cities of Rakhov and Siget, moved to the right bank of the Tisa. This assisted the advance of the 2d Ukrainian Front into Hungary.

As a result of stubborn battles during the third stage of the operation (18-28 October) the forces of the 18th Army and 17th Guards Rifle Corps which were reinforced by large units and units from the front's reserve smashed the enemy on the southwest spurs of the eastern Carpathians and liberated Mukachevo on 26 October and Uzhgorod on 27 October. Their concentrated and coordinated blows on the Mukachevsko-Uzhgorodskoye and Sigetsko-Chopskoye avenues determined the successful outcome of the entire Eastern Carpathian Operation. Exploiting the swift advance on the western avenue, the forces of the 4th Ukrainian Front with the decisive cooperation of the 2d Ukrainian Front moved to the Sredne-Dunayskaya lowlands on 28 October 1944 on a 140-kilometer front. By this time, the large units of the 38th Army had arrived at the line of the Visloka River.

The complete liberation of the territory of Soviet Ukraine and southeast Poland from the Hitlerite occupiers was accomplished as a result of the Eastern Carpathian Operation. The German fascist forces lost an important strategic line -- the eastern Carpathians. The Soviet forces liberated the Transcarpathian Ukraine and a number of areas in Slovakia with the support of the partisans and people who had rebelled.

Purposeful party and political work contributed a lot to the success of the Soviet forces in the Carpathians. In particular, it was noted for high effectiveness and purposefulness in the forces of the 18th Army whose political section was headed by comrade L. I. Brezhnev. When the fighting men of the 95th Rifle Corps in repulsing strong counterattacks were storming the enemy fortifications in the Veratskiye passes, Leonid Il'ich intently followed the development of the battle. A total of 95 communist volunteers who had been trained by the army's political section to act as subunit party organizers were sent to the rifle companies. To a considerable degree this helped the fighting men to achieve success in the decisive offensive and complete the crossing of the main Carpathian range.

After the successful storming of the passes, the army was faced with completing the destruction of the enemy in the Carpathians. The 30th Rifle Corps which was

attached to the 18th Army from the front's reserve was committed to the battle in order to exploit the success in the direction: Mukachevo-Uzhgorod. The officers of the army's political section headed by L. I. Brezhnev carried out the painstaking work connected with the rapid regrouping and reception of its troops into the composition of the army. Specific help was given to the corps political workers in organizing party and political work to solve the combat missions facing them. Effective political work like this was conducted in the units of the army's mobile group which was also committed to the battle on the Mukachevsko-Uzhgorodskoye Avenue. Shifting to the offensive on 19 October, the army's forces acted decisively and harmoniously. Leonid Il'ich noted in one of the political reports from those days: "Beaten by our forces in the mountains, the enemy was so disorganized and discouraged that he lost control and communications and was not in a condition to provide any serious resistance in the battles for Mukachevo and Uzhgorod".

It is difficult to overstate the military, political and international importance of the brilliant victory in the Carpathians. In his greetings on the occasion of the 30th anniversary of the liberation of the Ukrainian SSR from the fascist occupiers, L. I. Brezhnev pointed out: "The forcing of the Dnepr and the liberation of Kiev, the smashing of the enemy forces at Korsun'-Shevchenkovskiy, the battle in Transcarpathia, and many other battles--these were the landmarks in the victorious advance of Soviet forces onto the Ukrainian land. The liberation of the Ukraine and the defeat of the fascist hordes in Belorussia were the harbingers of the final victory of the Soviet armed forces and opened the way to the liberation of Europe from fascist enslavement.

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AIR FORCES

INTERCEPTOR SQUADRON COMBAT TRAINING

Moscow KRSNAYA ZVEZDA in Russian 21 Jan 81 p 2

[Article by Col A. Sorokin: "On an Attack Flight"]

[Text] The examination which has already been passed always seems easier than the coming one. Lt Col Vladimir Frantsevich Nikiforov, a student in the correspondence department of the Military Aviation Academy imeni Yu. A. Gagarin must convince himself of this once again. Here he is selecting the reading material to prepare for the next examination -- on the fundamentals of scientific communism -- and is surprised at how many volumes there are.

However, having returned to the lecture hall, the officer does not hurry to start on the books but opens up a thin brochure. "The Basic Directions...." How many times has he carefully read the familiar text! He has special attention for this primary source: Soon communist Nikiforov along with other delegates to the coming party forum will be discussing this CPSU Central Committee document for the 26th party congress.

Yes, there have been many small and large events in his life during the last 33 years. And here is one of the most striking ones being added. It will be one of the most significant lines in his biography and will be remembered all his life. Can one really forget how the heart throbbed when the results of the voting by the communists during the recent oblast party conference, where he among others was unanimously chosen to be a delegate to the 26th CPSU Congress, became known.

At first Vladimir Frantsevich even felt uncomfortable: Why had such a high honor been given to him? He had not performed any special services. His length of party membership is not great. He thinks that, as a communist leader, he must still learn and learn a genuine work style from his senior comrades. The squadron which he commands could also have even higher accomplishments. If they had singled out professional training, there are--you see--sniper-rated pilots, genuine aces, in the district.

However, let us put this low self-rating by Vladimir Frantsevich down to the personal modesty which is quite typical of him as a communist. It is possible to add much to this. As squadron commander, he expertly guides the work of the

primary party organization and skilfully relies on it. His experience in directing competition deserves attention. During the past training year just as during the previous one, the squadron completely carried out plans and obligations and moved to the line of excellent ones. All the experienced aerial fighting men corroborated a firstclass rating; the young fliers received a thirdclass rating and are now preparing to raise it. Gross violations of military discipline have been eliminated in the subunit.

Lt Col V. Nikoiforov is a military pilot firstclass, a recognized master of aerial combat and intercepts in a fighter aircraft with variable-sweep wings. In outward appearance he is not very outstanding. However, again it is how one looks at him. True, he is not tall but is smart in appearance and built like a sportsman. His youthful face attracts attention by its expression of will and manliness. And more, there are the sky-blue eyes. One can imagine how they flash during an attack flight! But in a normal ground situation when there are no difficult matters as yet, they are pensively thoughtful. Vladimir Frantsevich is stingy with words, he is deliberate in his actions, and he is not emotional. But at work, during difficult work, he changes beyond all recognition. True, he is restrained, but he is already intent and business-like.

It was this way several months ago. An "input" arrived at the very height of the flights with the young pilots. The experienced pilots had to master the following principle of missile combat -- the destruction of a high-speed aerial target from a tactically unsuitable position. One can say that it is necessary to carry out a complicated maneuver from an extremely awkward position -- having caught a moment -- and to attack and destroy the target with a missile in a sharp turn at an enormous approach speed. The conditions are as follows: The G-forces, the range, and the angle of approach of the target must be strictly determined. The pilots were perplexed. Someone even joked:

"Indeed! Why so simple when it could be complicated?"

A spark of fervor splashed in the blue eyes of the squadron commander. Complicated? However, you see, he knew the "corridor" -- group aerial battles at low altitudes in the most unlikely situations. The pilots recall this and wait for what the command will say. Moreover, he is studying in the academy and is solidly learning modern combat tactics.

The squadron commander said: "The principle guarantees the surprise of the strike. However, it must be mastered. As mountain climbers say, it is a crest of the first category of difficulty. Let us begin."

As with any new task, there were no prepared elaborations. They created them themselves. They sketched, they conducted short exercises and tournaments with the tactical control officers. They worked out a maneuver on the trainer and, in particular, determined the moment of its beginning. In a word, when they left on the flights, they already had seen with their own eyes the entire dynamics of the intercept, maneuver, and attack. Confidence was complete. However, Capt V. Atrashonok, the deputy squadron commander, is flying-- a failure. After him is Maj Ye. Tsygankov, the political worker,--the result is the same. Capt N. Goryayev, the best flight commander, -- a miss....

The squadron commander flew with his wingman. He detected the target and began the maneuver in a timely fashion. The turn was steep but they demanded from the command post: "Still more energetically!" The bank was such that the plane almost stood on its wing, lights flashed in his eyes from the G-forces. However, the "enemy" nevertheless managed to slip through. Yes, it was simpler in the diagrams....

They began everything all over again. Each element of the maneuver and the calculations were checked about a hundred times. They "flew" on the trainer for hours, they sat in the aircraft cockpit. They marked time on the runway until they were tired, gaming the flight "dismounted". It would seem that everything had been provided for now. They flew -- again not a single record: The G-force was great, the launching range was too short, the angle of approach was not right.

The youth see all these failures by their instructors. Until now it had seemed to the lieutenants that there was no exercise which their commanders could not perform brilliantly. And here.... Once after classroom "battles" when the entire board was completely white from the chalk attack lines, Yevgeniy Nikolayevich Tsygankov winked at the squadron commander, anxiously casting his eyes at the youth. The commander who had learned during six years of working together to divine any movement of the political worker's soul, took the hint: as they say, how awkward it is! Vladimir Frantsevich loudly said:

"Well, let them learn persistency and the overcoming of difficulties; they will never bow their heads to failures."

Yes, this was a graphic lesson of tenacity in achieving an assigned goal. For eight intercepts of an elusive "enemy", they had done everything. There were many hours of strenuous training before each flight like this. And the results still did not make one happy. Perhaps doubts had already begun to overcome some; however no one had decided to express them aloud seeing the obsession and faith in success with which the squadron commander was working. Everyone, looking at him, worked untiringly, learning diligence and indefatigability in work from him. At first, it seemed to many that he was basically acting in accordance with his aptitudes. True, this was so. Even in school, they had detected a natural talent for mathematics in him and planned a big future for him in this walk of life. It could have been. You see, his classmate with whom he won prizes in mathematics olympiads, is now a doctor of sciences. Not only the doors of VUZ in his native Chelyabinsk were open to Volodiy Nikiforov, the scion of a worker's family who had finished school with excellent grades. However, he went to a military school and received a diploma as an engineer pilot -- with honors. After three years he became a firstclass aerial fighting man and a flight commander. At 27, he commanded a squadron. Of course, his aptitudes did not play a minor role here. They were displayed right away in the academy. However, you see, persistent work is needed to develop them.

Once, the squadron commander said in a conversation with LtsV. Gavrilov and P. Terent'yev when they were trying to decrease for themselves the volume of flight preparations by relying on their aptitudes: "It is still necessary to add work efficiency to aptitudes".

However, let us return to the exercise which was unusual in its difficulty. The squadron commander devoted quite a bit of effort to researching all its elements and came to the conclusion that it was necessary to increase the dynamism of the attack. They began to think about where and how to save seconds and fractions of them. In their joint search, the pilots and command post officers found interesting methods for intensifying the swiftness of the strike. And here is the first success: The commander and his deputy for political affairs hit the target. And then it turned out that every intercept was a record.

Here is a tactical flying exercise on a remote range involving the actual launch of missiles at radio controlled targets. Who should be sent on the first intercept? There are no words to express how Nikiforov himself wanted to open the "combat record." However.... would this be seen as the commander's lack of confidence in his subordinates' training? He gave the right for the first strike to one of them -- Capt Nikolay Goryayev, the deputy secretary of the squadron's party bureau (he is now the secretary). Capt Nikolay Grishin, the command post flight controller, was directing. The pilots even understood his silence-- the pause between commands-- correctly. Goryayev in a sharp turn with an inconceivable bank shot down the radio controlled target -- a pilot-less aircraft-- with a light hand on the first-pass. The others had to move against the alternate -- a parachute -- target which all pilots hit with the first missile also with an exceptionally complicated maneuver at an enormous approach speed.

The technicians and all ground specialists also worked well. Formerly, gaps had occurred with them also. However, Capt Tech Serv I. Karyy, the deputy airfield Engineering Service commander sharply raised exactingness on his subordinates. At times, the squadron commander had to restrain Ivan Ivanovich's excessive ardor, but nevertheless this communist was able to instil in each specialist a sense of personal responsibility for the safety of the flights.

The squadron commander was also intolerant of various types of indulgences and-- most of all-- of displays of a lack of discipline. When he was party bureau secretary he had developed a rule to listen to an individual and see to it that the latter himself rated his attitude toward work, and then help him to correct it. Perhaps, someone is inclined to consider this spinelessness, but only the one who is not familiar with the high principles of communist Nikiforov.

Thus, last year he patiently listened to the repentance of an officer who had taken a fancy to drink. He spoke firmly with him about ending this. He didn't last long.... The squadron commander did not listen to new protestations but announced his decision which abruptly changed the fate of his subordinate. And this decision was unshakable.

... Vladimir Frantsevich has passed many different examinations in his life -- and not only in training auditoriums. Examinations on military, command and party maturity have been passed in the boundless sky, in the quiet of the cockpit, and in the sharp disputes of party meetings. Ahead are new tests -- and he is ready for them.

AIR FORCES

HELICOPTERS IN ANTITANK SUPPORT ROLE

Moscow KRASNAYA ZVEZDA in Russian 25 Jan 81 p 1

[Article by Lt Col Ye. Polyakov, a sniper-rated military pilot, Group of Soviet Forces in Germany: "Commended by the Commander-in-Chief"]

[Text] The approach of an "enemy" tank column to the battlefield considerably complicated the solution of the task facing the advancing motorized rifle sub-units. The motorized rifle battalion commander called in the helicopter gunship squadron which military pilot firstclass Maj A. Borisov commands. The squadron's navigator, Capt P. Lyubochko, skilfully used the depressions and heights along the route to achieve flight secrecy, and the squadron appeared over the battlefield unexpectedly.

Captain P. Lyubochko was the first to make an expert ATGM launch from maximum range. Sr Lts A. Obrazov and A. Zolotarev and Lt V. Barnichko, the supporting aircraft commanders, sent missiles accurately into the target following the example of the leader. General of the Army M. Zaytsev, commander of the group of forces, who was observing the actions of the aviators gave a high rating to the squadron's aerial training and commended the progressive aviators when the results of the exercise were being summed up.

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AIR FORCES

AVIATION REGIMENT PHYSICAL TRAINING

Moscow KRSNAYA ZVEZDA in Russian 4 Feb 81 p 4

[Article by Lt Col N. Kokorin, chairman of the sports committee of the N-skiy Aviation regiment: "Following the Commander's Example"]

[Text] Not so long ago, some pilots in one of our squadrons still did not always successfully cope with complicated flight assignments. At times, constraints, sluggishness, and slow reactions were observed in their actions. It was not difficult to find the cause. It is known that each minute spent in a cockpit on a supersonic intercept performing a combat training mission costs quite a bit of expenditure in physical and nervous energy. Therefore, a pilot must always be "in a condition" which guarantees the successful performance of flying missions, accident-free flights, flying longevity, and constant combat readiness -- in a word, to have a reserve of physical and psychological strength.

Of course, I am far from thinking that a rough parallel should be drawn: For example, if a pilot has not drawn himself up so many times on the horizontal bars today, tomorrow he will make a mistake in the air. However, one thing is beyond question: Physical training has a direct relationship to flying skill.

Lt A. Ivanov and Sr. Lt A. Fokin, for example, have sensed this from their own experience. They clearly lacked rapid reactions, endurance and psychological steadfastness.

The situation changed when Capt A. Yevsyukov took charge of the squadron. The new commander decided that the best way to improve physical training -- and this means combat skill -- was by personal example combined with high exactingness on subordinates. No matter what service work he was engaged in, he always found time to check on physical training classes and their attendance and to organize various contests with the help of party and Komsomol activists.

The leading sportsmen, Capt V. Stytskov and Lt V. Markov, took those fliers, who were lagging behind in a physical respect, under their patronage. The joint training sessions brought a noticeable benefit. After some time, Lt A. Ivanov and Sr. Lt A. Fokin became physically stronger and began to display good results in flying work.

Socialist competition which was skilfully organized by the squadron commander contributed to the improvement in the aviators' physical training. Capt. A. Yevsyukov saw to it that his subordinates adopted specific obligations in physical training and sports and carefully checked on their fulfilment. Not a single pilot escaped the commander's eye. If things were not going well with someone, he immediately looked into what was preventing the pilot from attending the training sessions or taking part in the contests.

When organizing competition, Captain Ye. Vayukov saw to the publicizing and comparison of its results. How was it before? Only the best athletes were singled out after the contests and the others were left seemingly in the shadows -- they were simply not noticed. Captain Yevsyukov organized affairs differently. The results of all aviators-- without exception -- were announced. It was immediately clear who was lagging behind, who had taken a step forward, and who had lowered his indicators. This practice combined with a detailed analysis of the shortcomings in sports work was an important factor in improving the men's physical training and in the growth in the number of sportsmen with an official rating.

Time passed and the squadron under the command of Captain Yevsyukov (he entered an academy in 1980) began to take first place in the regiment based on all indicators, including physical training, and confirmed the title of "excellent" based on the results of the past training year.

What does this example tell us? First of all, it tells us about the fact that the level of the aviators' physical training primarily depends on the commander, on whether he is an ardent enthusiast of physical culture, and on his exactingness, persistence and instructional methods skill.

One day, I rebuked a young flier, Lt V. Dokudovskiy who was treating sports training passively. As an answer, I heard that his squadron commander was also seldom at the athletic training area but he flies better than anyone.

It turned out that the squadron commander was indeed absent from physical training classes fairly often, citing various types of urgent matters. Naturally, this did not escape the attention of the young fliers in whom the impression was created that it is possible to fly well without sports classes. However, the young fliers had not considered the fact that their commander had a lot of experience in flying work and profound knowledge. He also had a reserve of physical strength accumulated as a result of many years of athletic training. However, even such a reserve can run low very quickly if one's body is not tempered regularly. The young pilots and their commander should have been reminded of this.

Capt V. Marten'yanov, for example, with whom I had occasion to serve, had the reputation of being an experienced and skilful aerial fighting man. However, when he became a squadron commander, he dropped in on the athletic training area more and more rarely and began to put on weight. Of course, it is difficult to maintain that it was only excessive kilograms that undermined his health; however, the fact that they played an insidious role is beyond doubt. During the next medical examination, it turned out that the work of the pilot's heart had weakened. He was taken off flying status. But, you see, he could have flown longer and well if he had seriously concerned himself with his athletic condition.

It is also impossible to forget another matter. I have encountered aviation commanders who are ashamed to approach the equipment during physical training classes and who only give "theoretical" directions on how best to perform this or that exercise. As a result, they injure their authority in the eyes of their subordinates.

It is necessary to understand one simple truth: Regular sports classes are no end in themselves and not at all a voluntary matter for this or that pilot. They are one of the important sections in his combat training. This means that not only good intentions but also strict exactingness and constant checking are needed here.

With the active support of the party organization, the members of our unit's sports committee act this way. They conduct explanatory work persistently, listen during their meetings to the reports of squadron and flight commanders on the progress of the pilots' performance of sports obligations and their passing of the VSK (Military Sports Set of Exercises) norms, organize help for those falling behind, and disseminate the experience of the best instructional methodologists.

Now, it does not surprise anyone that many aviators go together to exercises--although each officer is free to do it on his own, and run cross-country races in the mornings. The active participation of the officers in the contests for first place in the unit, large unit and city has also become a natural thing. Our colleagues, military pilots firstclass Sr Lts A. Parakhin, Ye. Krylov and V. Borodin, are among the first-place winners in the district's aviation.

An inspection which took place in the regiment showed that our aviators are on very friendly terms with sports. All the pilots have become VSK 2d degree badge holders and many of them have passed the VSK 1st degree norms. There is no doubt that the success makes us happy. However, we cannot of course stop with what has been achieved. We are aspiring to achieve even higher sports results, we are aiming at solving this important task of all flight and squadron commanders.

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NAVAL FORCES

TOURISM AND TRAINING DISCUSSED

Follow-Up Report on Criticism of "Sokol" Facility

Moscow KRASNAYA ZVEZDA in Russian 16 Jan 81 p 2

[Article: "Banquet at the Campfire"; please note that original article appeared in JPRS 77416/19 Feb 81/1568/pp54-55]

[Text] A report by Captain 2d Rank V. Polishchuk, which told about serious shortcomings in the work of the "Sokol" tourist base, was published under the heading "Banquet at the Campfire" on 15 October 1980.

As was reported to the editors by the member of the military council and chief of the Political Directorate of the Pacific Fleet, Vice Admiral V. Sabaneyev, by order of the Deputy Commander of the Pacific Fleet for Rear Services and Chief of Fleet Rear Services, the chief of the tourism and excursions, Lieutenant Colonel V. Kuternitskiy, was reprimanded. His deputy, Navy employee S. Fisunov, was relieved of his duties. For gross violation of labor discipline, the senior instructor of the tourist base, A. Leshchenko, was dismissed.

Submarine Damage Control Training

Moscow KRASNAYA ZVEZDA in Russian 16 Jan 81 p 1

[Article by Sr Lt V. Sikorskiy, Red Banner Pacific Fleet: "Officers Train"]

[Text] The commander of a small ASW ship, Senior Lieutenant V. Bastin, reporting to the inspector readiness for a check exercise on damage control, awaited instructions. He was confident that his subordinates were equal to any special situation. In his opinion, the seamen operated dexterously and clearly on drills. In any case, reports about the victory over fire and water arrived at the ship's control center long before the end of the standard time.

"'Fire' in the steering compartment!" the unit staff officer issued the command in an even voice and immediately started the stopwatch.

Not even half the time intended for extinguishing a fire had passed when the commander of the damage-control party reported:

"Fire extinguished!"

"With what men and equipment?" the inspector quickly asked the ship's commander.

Senior Lieutenant Bastin did not expect such a question, but he found the right thing to say:

"As always." And he enumerated how many foam generators, fire extinguishers and fire monitors were concentrated in the area of the fire.

"Yes, really, as always," and irony could be heard in the inspector's voice. "But in this situation all the fire extinguishing equipment on the ship should have been concentrated there. I issue a new special situation: the 'fire' has spread into the reloading section!"

Such an emergency situation is extremely possible. But Senior Lieutenant V. Bastin did not consider this on drills. Hearing the strange special situation, he was taken aback. The crew of the damage control party made a new error: the sprinkler system of the gun magazine had not been turned on and no measures were adopted to cool the bulkheads. In short, the ship check damage control exercise was unsuccessful this time.

The failure became the subject of a pointed conversation at a conference in the unit headquarters and at a party meeting. The command made the decision to conduct systematic drills with the officer personnel, involving ship commanders and engineer officers in the participation in them.

...The officer checking the exercise, O. Shalapin, warns the officers who are standing in formation:

"Fire may break out at any minute and in any place. A battle is under way, the ship has been damaged, and its combat readiness must be restored quickly. If you can cope with this yourselves, it means that you will be able to teach your subordinates to operate clearly and skillfully in the most difficult situation."

Yes, here, in the compartments of a training ship (UTS) the leader of the drill does not even require minutes to create a situation where electrical wiring and various generating sets ignite simultaneously and hot spots of continuous fire arise. Officer Shalapin gives the sign to the UTS instructors and an electric panel flares up in a compartment, electric wiring begins to smoke in an oily manner, and fuel oil catches fire on the deck.

The emergency unit headed by Captain-Lieutenant V. Tumel' rushes to the places without delay. The compartment's current is cut off as the first thing. Captain-Lieutenant V. Tolstikov, quickly knocking the fire from the electric wiring with carbon dioxide from a fire extinguisher, helps Captain 3d Rank A. Kovalev to handle the foam generator. A thick blanket of foam reliably covers the burning fuel oil. Despite the high gas concentration, the officers, including Senior Lieutenant V. Bastin, cope with the special situation confidently and receive an excellent grade.

Officers are undergoing just as difficult a test in the next compartment where, in accordance with the will of the drill leader, streams of icy sea water are rushing through holes. Every hole is a surprise: in a tight enclosure, behind a tank, in a steeply sloping side

The commander of the group of officers makes an estimate of the situation and places the people. Officers V. Zabolotnyy and A. Popov, grabbing a patch, entered into single combat with the water which is white from pressure and is gushing from a hole which has been torn. Zabolotnyy tries to cover the hole with the patch at once. He is unsuccessful--the stream is too powerful. Then the officers introduce the patch from below, reliably fastening a brace. The other holes are sealed off just as dexterously. The norm is exceeded. Drops of very cold sea water and hot sweat are shining on the faces of the seamen.

The groups change places. And again furious flame buzzes in the compartments of the training ship and salt water gushes from the holes. And again the officers enter the struggle with the elements. And they emerge the victors.

Bosphorous Transit Described

Moscow KRAHNAYA ZVEZDA in Russian 20 Jan 81 p 1

[Article by Captain-Lieutenant A. Tkachev: "Tested by the Straits"]

[Text] Pilot's sailing directions recommend that in passing through the Bosphorous Straits the most experienced helmsman should be placed at the helm, the anchor should be kept in readiness for immediate dropping, and the location of the buoys in the channel should not be trusted. In recent years, the management of the port of Istanbul supplemented the former list of recommendations to navigators with the requirement not to enter the straits if a supertanker is located there. Here is a memorable example. The collision of a supertanker with one of the vessels led to a situation where traffic through the Bosphorous was halted for a week in November 1979. While oil burned on the water, the echo of the catastrophe spread over the world's newspapers. Since then, vessels have collided several more times in the narrows of the Bosphorous.

What has been stated explains why the commanders of ships, however much experience they may possess, look upon the passage of the Bosphorous as an examination. Captain 3d Rank V. Kryat took command of the "Apsheron" recently. He had gone through the straits only as a navigator and an executive officer. The commander of the navigator's department, Lieutenant S. Ternovskiy, will also be passing through the straits for the first time.

The straits zone is the Bosphorous and the Dardanelles together with the Sea of Marmara. At the base, a schedule was calculated for the movement of the "Apsheron" through the straits zone. However, it was threatened with disruption only several hours after the start of movement. An oncoming storm! The waves drove up under the stem. The course speed of the "Apsheron" dropped. The increase in revolutions to the propeller only intensified the vibration of the hull.

Towards evening, the commander received a radio message. The fleet staff gave permission to return to the base if the commander should consider it necessary to make such a decision. But the force of the storm yielded to the persistence of the people. The "Apsheron" entered the Bosphorous, making up the lagging behind the schedule during the night.

The moment when the straits open is always impressive. The ship goes toward the shore for a long time. There are no signs of a passage. Then the sentry Capes

Rumeli and Anadolu, which block the access to the straits, roll away to the left and to the right, like a theater curtain. The winding canyon sucks in the ship in order to release it from its gorge, but now into the Sea of Marmara. The surface current in the Bosphorous is up to four knots. It worsens the controllability of ships and vessels which are forbidden to enter the Bosphorous at a speed of more than 10 knots. But this is still tolerable interference. But here, in the fog, passage through the Bosphorous is forbidden. In the winter, fog periodically shuts the Bosphorous.

If we can believe the stories of eyewitnesses, the captains of vessels rage openly. The neighboring hills are perfectly visible and it is as if the Bosphorous is packed with cotton wool.

Luckily for us, the very wind--the driving storm--which had damaged the nerves of the command yesterday had thoroughly cleared the Bosphorous canyon. Visibility was good. The "Apsheeron" left the Black Sea.

The atmosphere at the ship's control center is calm. Although many are excited at these moments. But they keep a firm grip on themselves except, perhaps, for Lieutenant Ternovskiy who runs out on the bridge extension too often to take bearings on shore reference points. The commander of the ship prompts that the commander of the electrical navigation group can be assigned to the direction finder. Ternovskiy proceeds in just this way. The bustle on the bridge decreases.

The span of a bridge loomed up ahead, and a white launch appeared then and there.

Three men in civilian clothes unceremoniously snap the "Apsheeron" from long-barreled cameras. The launch whirls around the "Apsheeron," creating additional tension on the bridge of the ship. Escorting us almost to the bridge, the launch rushes for the shore.

And Istanbul greets us. Spread on the shores of two continents, the city includes the Bosphorous as its best avenue. The sides of the straits are built up, now with palaces, now with shanties, but the overall silhouette of the city is beautiful. I don't believe that there is a point on land from which the famous domes of the Hagiya Sophia and Blue Mosques can be seen better than from the Bosphorous. No structures interfere with the gaze in taking in these masterpieces all at once.

However, the watch must not gape at the sides. Small passenger ferries, launches, and row boats travel densely across our course from the Bosphorous Bridge to the Golden Horn. The bridge cannot handle the flow of vehicle transport; therefore, small craft cover the Bosphorous more densely from year to year.

The psychology of the ferry captains is amazing. Slipping under the very noses of the giant vessels, they have the same habit as the dare-devil boy who darts across the street under the very nose of an automobile. However, the solution lies on the surface. The more trips the ferryman makes, the greater the profit.

The "Apsheeron" had to change course a few times to reduce the risk of colliding with the small boats. The officer of the watch, Senior Lieutenant G. Andreyev, displayed high vigilance here.

But here is the exit from the Bosphorous. The shores spread apart swiftly. The rusted and warped hull of a supertanker which has been towed into shallow water can be seen on the port side. All those who enter the Bosphorous or emerge from it look at it willy-nilly. Captains have something to be thoughtful about here....

The "Apsheiron" passes through the Sea of Marmara on schedule. But then the Dardanelles greet us with a surprise. A snowfall with an intensity which is rare for these latitudes reduces visibility to half a cable length and at times almost blinds the signalmen. But the radar comes to our assistance.

We proceed with the radar bearings as well as with visual bearings. The executive officer began to help Lieutenant S. Ternovskiy; he was carried away and actually pushed him away from the navigator's table. The commander of the ship had to restore the navigator to his rights by personal interference.

Most acute was the moment in the area of Cape Nara, where the Dardanelles narrow greatly and make a turn. Vessels behind the cape cannot be seen by radar. They jump onto the radar screen completely unexpectedly and in dangerous proximity. The highest accuracy and vigilance are required here, all the more since the maneuver of the vessels is restricted here.

In the area of Nara, the "Apsheiron" parted with some oncoming vessel in a snowfall. The noise of the other's diesel could be heard, but we could not even see the vessel itself. The test of the Dardanelles was the last one in the straits zone. But not on the cruise. The Aegean Sea greeted the "Apsheiron" with gale.

Training Activities of Helicopter Crews

Moscow IZVESTIYA in Russian 9 Jan 81 p 3

[Article by Maj N. Stupnev: "Ships' Helicopter Pilots"]

[Text] Wherever you may cast a glance, it is only blue everywhere. And you don't realize at once where the sea begins and where the sky does. However much you may look, there is nothing to catch the eye. Not even a mirage occurs here, hundreds and even thousands of miles from shore. But what is this? Tiny dots--one, a second, a third--were suddenly sprinkled into the infinite blue abyss. They increase in size quickly, being transformed into small, nimble helicopters. What are they doing here, above the boundless water expanse, where did they take off?

And here's the solution. Speed and flight altitude were reduced. The helicopters hovered above the sea. Unusual instruments slid down from hatches, supported by thin, flexible cords. They are sonar stations which are used for the search and detection of submarines which are concealed in the depths of the sea. One such submarine was to be found this time by the crews of the helicopters which took off from the deck of the ASW cruiser "Moskva."

Minutes pass, half an hour, an hour. The hovering points and search conditions are changed, but the underwater depths, as formerly, do not yield their secret. The sensitive equipment installed on board the rotary-winged aircraft is silent and in the headphones of the pilots and navigators there are no familiar signals which are typical of contemporary submarines which slide as shadows in the gloomy sea depths. But

nevertheless, the members of the crew are calm. They know: it was often like this on long cruises--first the waiting, and then the long-awaited conclusion, the duel whose outcome, as a rule, was predetermined by the ship's helicopter pilots.

This time, too, Major A. Fedurin, Captain A. Smirnov, and other antisubmarine warriors won their usual victory. Receiving a barely audible signal from the sonar, the aviators classified the target contact under conditions of an acute shortage of time which is typical of contemporary combat, determined its coordinates, and then reported the data on the submarine's location to the cruiser's primary control station. The mission was accomplished. They can return to the ship.

And they were already waiting for the helicopter pilots on the "Moskva." The established speed had been set and the flight deck was prepared to receive the crews--a floating airfield, as the aerial antisubmarine warriors call it among themselves. Today, the landing presents no special difficulties. The sea is calm and there is no ship motion. The factor which usually compels the maximum concentration of attention of the flight control officer, the crew members, and really, of all those engaged in support of the flights. Anyway, the ship is not a runway on the shore. The waves break loose, the sea becomes agitated, and the deck begins to swing like a giant magnet: up and down, up and down. In addition, lateral oscillations begin. Try to touch a helicopter down here in accordance with all the rules of flying art. It is not a simple matter. If the pilot does not catch the amplitude of the oscillation and begins to land the machine at the moment when the deck is moving toward him or, conversely, is moving downward, the landing may turn out to be rough. The equipment's failure or its going out of operation are possible.

Once, about 10 or 15 years ago, various mistakes took place and, really, it was difficult to avoid them then. Shipboard aviation was still gathering strength and experience. In those days, much seemed new and unfamiliar to the helicopter pilots. And first of all, being on a ship itself. And really, how could it be otherwise? On land everything is simple and usual. You accomplished the mission, prepared the equipment, and you could go home to your family. But here, there is nothing like it. Only the sea all around. The deck, one can say, is the size of a coin.

No, in those years it was difficult for the ships' helicopter pilots. And today many of them, including officers V. Savchuk and G. Nikiforov, G. Simagin and N. Akif'yev, A. Fedurin and V. Tkachenko remember well how many difficulties they had to overcome before they became genuine masters of their trade for which long cruises were a genuine school of professional training and psychological steadfastness.

Numerous facts convince us that the ship's helicopter pilots are maturing with each cruise. In the Red Banner Black Sea Fleet the names of communists Major A. Fedurin and Captains V. Propoy, V. Smirnov, and V. Yankin are mentioned with respect. In accomplishing important missions far from the homeland's borders and finding themselves in an unforeseen situation, they acted as becomes members of the Leninist Party--bravely and coolly.

...The alarm signal disrupted the habitual rhythm of work. The illuminated indicator boards flashed and began to blink. Literally seconds decided everything. And nevertheless, Major A. Fedurin rose to the occasion. The officer climbed to a safe altitude and headed for the radio coupler on the ASW cruiser which was in one of the regions of the Mediterranean Sea. But although the initial danger had passed, it

was too early to settle down. The distance to the ship was rather great and only the boundless sea surface spread all around for many dozens of kilometers while alternate airfields, naturally, were not expected. And really, what alternate airfields can there be at sea if the only support for a helicopter is the deck of a cruiser?

Major A. Fedurin realized all this clearly. A participant in nine long sea cruises, the officer changed the engine to the optimum operating mode and, maintaining his self possession, he continued to pilot the machine which had grown heavy calmly and confidently, mentally calculating the safest variant for the approach to the deck of the ASW cruiser. At these moments, for Anatoliy Mikhaylovich the ship was not simply a landing site where he could square his strained shoulders and analyze what had happened. No, the officer's feeling was deeper. Who knew better than he that right now main attention was fixed on him at all stations, in the numerous compartments, and in the primary ship control station.

And he had to justify the confidence of his combat friends who had been tested by all storms and winds. Of those whose minds and hands controlled this mighty, modern ship which had been created by Soviet scientists, designers, engineers, and workers. Just as all the helicopter pilots, Major A. Fedurin was genuinely proud of belonging to the ship's crew. The pride in his comrades in arms and the necessity to accomplish his duty to the motherland and the Soviet people who entrusted the contemporary aviation equipment to him did not permit the pilot to become slack or commit an error. The officer brought the helicopter exactly to the cruiser's radio coupler and lowered it to the deck irreproachably.

It goes without saying, anything can happen in aviation. But if it is even difficult for the crew above land, under conditions of a long sea cruise the difficulty factor is doubled and, at times, even tripled. And this has its reasons. The feeling of loneliness which arises in young pilots and navigators when they are accomplishing their first missions over the monotonous water surface without reference points counts for a lot. And although it is gradually overcome with each new takeoff from the deck of the ASW cruiser, at times the aviator requires many months to temper himself psychologically and to attune himself for a meeting with the world of silence.

And the absence at sea and, what is more, in the ocean, of check reference points which are so necessary for the helicopter crew to determine its location? The radio coupler of the cruiser or one of the auxiliary ships helps the helicopter pilots to plot the course accurately to the deck-airfield and to correct the position of the rotary-wing machine above the boundless water space. But one cannot count on the radio coupler alone. It is also important to be a superior navigator and to be able to use the most diverse equipment installed on board the helicopter in combination. And, finally, it is necessary to master that great sum of theoretical knowledge and practical skills which are inherent in experienced aviators and masters of searches for "enemy" submarines at distant sea and ocean positions.

Among the psychological factors in the work of ships' helicopter pilots above the large water spaces we should also include the probability of the appearance of illusions which are connected with prolonged hoverings at points of investigation of the sea depths. Even experienced pilots are among those who, being above the very same place, at times feel as if their machine is beginning to displace although the instruments convince them that the hovering point is still the same. This illusion

is engendered by the motion of the waves from whose crests the pilot is separated by only several dozen meters of altitude. These waves also prevent the commander of the crew from fixing his view on a specific point relative to which he could adjust the position of his machine.

Night flights exert a great influence on the minds of ships' helicopter pilots. This is where genuine skill, coolness, and endurance are required. Imagine: somewhere below the restless waves beat against each other with a noise, the wind not stopping its whistling, and all around--it is pitch dark, continuous inky haze. Neither sky nor sea. And one must not only accomplish the assigned mission--to find a submarine in the depths, but must also determine the location of the cruiser in the pitch darkness, reach it, and then, using only the "glowworms" of the landing lights on its deck, lower the helicopter irreproachably to the barely illuminated pad.

It is difficult, very difficult, to be a ships' helicopter pilot. But it is namely there, on the distant positions, that the Black Sea Fleet aviators become hardened and mature. Boundlessly devoted to the Communist Party, they are preparing to greet the 26th CPSU Congress in a worthy manner and to make their contribution to raising the combat readiness of the ships and units. All long cruises in which the Black Sea Fleet aviators were participants were accomplished with grades of good and excellent. As regards the helicopter pilots themselves, many of them were awarded high government awards for successes in combat training, socialist competition, and the quality accomplishment of missions on long cruises--Orders of the Red Star, "For Service to the Motherland in the Soviet Armed Forces" 3d class, and the medals "For Combat Services." Among them are G. Nikiforov and V. Savchuk, G. Simagin, A. Varnakov, N. Chinis and N. Gukov, and V. Perelivanyy.

Fanned by the ocean winds and grown stronger in combat with storms, the helicopter pilots cannot imagine their service henceforth without the sea. That is why their hearts are again stirred when they hear once again: "Prepare for a long cruise!"

6367

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PERCEPTIONS, VIEWS, COMMENTS

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Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 1-2

[Full-text translated articles published in this issue of the JPRS report are indicated with an asterisk (*); excerpted articles are indicated with a double asterisk (**)]

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The "Tornado" Multipurpose Tactical Fighter
 Emblems of the Institutions, Major Formations, and Formations of the
 Japanese Ground Troops
 American "Knox" Class Frigate FF 1094 "Paris"

Articles by Soviet authors and the chronicle were prepared from foreign press sources.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. ARMED FORCES DEVELOPMENT IN THE 80's

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 3-8

[Article by Doctor of Military Sciences, Colonel A. Tsvetkov: "The U.S. in the 1980's: Reliance on Force"]

[Text] In the postwar era, a desire for military superiority over socialist countries was the principal objective of the policy of Western powers, and mainly the USA. Nor has the beginning of the 1980's been an exception, marked by new actions of J. Carter's administration aimed at achieving military superiority over the USSR and other countries of the socialist fraternity. We know, however, that each time, such attempts have been reduced to naught by responses from the Soviet Union. "...anyone familiar with postwar history," noted CPSU Central Committee General Secretary, Chairman of the Presidium of the USSR Supreme Soviet Comrade L. I. Brezhnev, "will quickly remember that the arms race developed according to the principle 'action--counteraction'. The West throws down its gauntlet, and the Soviet Union must accept the challenge. So it has been in the entire time from the first atomic bomb to our days. And the beginning of each new spiral in the arms race has invariably been accompanied by a new wave of lies about a 'Soviet threat'."

The USA openly announced its claim to world domination by force in the American President's January "State of the Union" message to Congress. The overwhelming majority of the "priority tasks" (five out of eight) named in the message have to do with intensifying direct war preparations, and with measures aimed at expanding and strengthening the USA's strategic positions on practically all continents.

At the beginning of the 1980's, the USA's global militant desires were rested on a foundation of increasing military allocations, developing and introducing new weapon systems and combat equipment, strengthening military-political alliances, and maintaining armed forces at high combat readiness in probable theaters of war.

Continual growth of military expenditures is an expression of the increasing militant preparations of the USA. The White House administration is literally breaking one record after another. According to UN data, in 1978 more than a third of the world's total expenditures for military purposes were made by the United States, and between 1945 and 1979--that is, in just 34 years--the U.S. military budget increased by almost 11 times.

As is noted in the Western press, the rate at which military expenditures in the USA will grow in the future will rise. In particular the Carter administration, attempting to be the example to its partners in the NATO bloc, plans to increase allocations to the Defense Department by \$17-18 billion each year, increasing them to \$220 billion by 1984.

American imperialists intend to use these tremendous assets to increase their military potential, and mainly the power of strategic nuclear forces, whether or not, as Chairman of the Joint Chief of Staff General D. Jones declared, SALT-TWO is signed. And Defense Secretary H. Brown was even more frank: "Our goal is to achieve, by the mid-1980's, military superiority for NATO over the Warsaw Pact members." It is specified in this case that the reference is primarily to nuclear superiority, placing a "potential of guaranteed annihilation" at the disposal of the USA.

Presently the United States is testing a new generation of warheads for intercontinental ballistic missiles now on the drawing boards, it is developing the MX mobile intercontinental ballistic missile system, it is forcing construction of new atomic missile submarines with the Trident sea-based nuclear missile system, outfitted with Trident-1 missiles, the more-powerful Trident 2 is being developed for this system, efforts are underway to adopt land-, air-, and sea-based missiles, tests on the B-1 strategic bomber are continuing, plans are being drawn up for a new bomber--a cruise missile carrier (for the present, the USA intends to use B-52 bombers for these purposes), and mass destruction weapons based on new principles of action are undergoing intensive development.

The 1980's are expected to witness further additions of new generations of weapons and combat equipment in the U.S. ground troops, particularly a qualitatively new "Eurostrategic" weapon--Pershing-2 guided missiles with significantly greater range and accuracy, and a higher degree of combat readiness. M-60 tanks will soon be replaced by improved XM1 "Abrams" tanks, and infantry weapons are undergoing modernization, as are antitank and antiaircraft resources.

The plan for providing new warplanes (F-14, F-15, F-16, A-10A) and helicopters to the U.S. Navy and Air Force have been approved and are now being implemented.

A program to modernize the navy is underway. By the early 1990's the Pentagon hopes to have 550 ships in the principal classes, with up-to-date tactical and technical specifications and high combat potentials. These requirements will be satisfied in particular by atomic nuclear submarines, atomic torpedo boats, and an aircraft carrier presently under construction, and destroyers, guided missile frigates, and multipurpose landing ships. The USA is planning to outfit a number of naval torpedo submarines and surface ships with cruise missiles in the next few years.

The possibilities for transferring strategic reserves from the USA to other regions of the world are rising significantly. For this purpose, in addition to improving the fleet of military transport aviation and landing vessels, extensive use will be made of airplanes from the air force reserve, as well as of civil aviation airplanes (250-300 craft) and merchant vessels.

The U.S. Armed Forces and NATO commands are intending to achieve a 20-25 percent increase in the combat readiness of the formations and units through qualitative improvement of the armament of the troops and of their organizational structure.

Dealing "from a position of strength" means increasing the size and raising the combat readiness of American troop groupings deployed in various regions of the globe.

Reactionary forces in the USA attach priority significance to strengthening the North Atlantic alliance. It is no accident that the American Senate has described this aggressive bloc as the "keystone of American foreign policy".

In accordance with the conception of "balanced total forces", the United States of America has assumed the obligation of creating and maintaining strategic and defensive forces and, in West Europe, operational and tactical nuclear weapons for the allied armed forces of NATO. Moreover it is maintaining several formations and units of its own ground troops and air force in behalf of the bloc. According to the foreign press, the USA has made the rest of the member countries responsible for maintaining mainly the general-purpose forces.

Taking on the role of world policeman, the United States has already deployed major troop groupings beyond the American continent. The most powerful of them is in the European zone (about 330,000 men), represented by the allied command (with its headquarters in (Vaykhingen), FRG. It contains ground troops, air forces, and naval forces outfitted with modern weapons, including operational nuclear missiles.

American ground troops in the FRG total about 190,000 men, and they are represented by the V and VII army corps (four divisions, three separate brigades, two armored cavalry regiments), the 56th Pershing Guided Missile Brigade, the 32d Antiaircraft Command, and combat support and maintenance units and subunits. The forward units of this grouping are deployed 60-70 km from the borders of Czechoslovakia and the GDR, and they are kept at a high level of combat readiness. When necessary, American troops in the Central Europe theater of war may be reinforced by the transfer of formations and units from the American continent.

Certain units and subunits of the American ground troops are deployed in Italy (the South Europe Tactical Group), in West Berlin (a separate brigade), and in Greece and Turkey (separate support and maintenance units and subunits).

The U.S. Air Force in the European zone (with its command and staff located in Ramstein, FRG) is represented by three air armies (the 3d in Great Britain, the 16th in Spain, Italy, Greece, and Turkey, and the 17th in the FRG and Netherlands). These forces are outfitted with modern tactical fighters, ground-attack aircraft, and reconnaissance aircraft (about 650). In addition the USA maintains "dual-based" squadrons, intended to reinforce this air force grouping, on the American continent in peacetime. In the course of numerous exercises and maneuvers, units and subunits of the U.S. Air Force practice the use of both conventional and nuclear weapons.

One of the key areas in the plans of the Pentagon is the Mediterranean Sea, an advantageous springboard for possible aggressive actions directly against the USSR and other socialist countries. The Sixth Fleet, which represents the U.S. Navy in

in Europe, is located here permanently. It has a strength of 22,000-25,000 men, and about 40 ships and auxiliary vessels, to include one or two multipurpose aircraft carriers (with 80-90 airplanes and helicopters aboard). Two squadrons of atomic missile submarines are also permanently based in Europe. The fleet's ships remain at sea most of the time. When the international situation turns for the worse, the Sixth Fleet is usually reinforced by transfer of ships, aviation, and marine infantry subunits. Such was the case, for example, at the time of the American intervention in Lebanon in 1958 (when the fleet's strength was increased to 60 ships). And in May 1976, when relations between countries of the Near East grew tense, ships of the U.S. Sixth Fleet and of other NATO countries were placed on alert and concentrated in the eastern Mediterranean with the purpose of demonstrating a military presence and exerting pressure upon the progressive and democratic forces of the Arab countries; this was done under the guise of a NATO allied forces command exercise, "Dawn Patrol-76".

One innovation in the military policy of the United States, foreign reviewers believe, is that armed groupings of the United States in Europe may be used to intensify American military presence in "critical regions" outside the NATO zone (in the Indian Ocean, the Near and Middle East, and so on). This was confirmed by the May (1980) meeting of NATO's military planning committee, which discussed the "crisis plan" developed by the Pentagon in the event that American troops deployed in West Europe would be required for adventures in other regions.

Considering the extremely important strategic and economic significance of the Near East, the USA is not concealing its intentions to maintain control over this region, to support favorable regimes within it, and to increase its military presence. These goals are served by the "peace treaty" recently signed between Israel and Egypt with American mediation, supposedly to stabilize the situation in the Near East.

Conclusion of this separate deal and provision of arms to these countries are viewed by American ruling circles as mutually related steps in the direction of creating a military-political alliance to replace the defunct CENTO bloc and the Shah's deposed regime in Iran, and of expanding their military presence in the Near and Middle East and reinforcing it in Israel and Egypt. By using the tactics of blackmail and coercion, the latter hope to add Saudi Arabia, Sudan, Somali, and Oman to this alliance. The Pentagon intends to use the troops of these countries (almost 735,000 men) to defend Western interests in the region and to suppress the liberation movement. Washington is attempting to impose its own order upon the peoples of these countries, relying upon the evolving alliance of the forces of imperialism, Zionism, and Arab reaction. In this case special hopes are laid on the Egyptian leadership headed by A. Sadat, which eagerly accepts its function as policeman in the Arab world.

Recent attempts by the White House to resolve the Cyprus problem in its own way are also called upon to play a major role in strengthening American presence in the Near East. American reconnaissance airplanes, which fly regular sorties over the Arab countries and along the borders of socialist states, are already being based at an RAF base on Cyprus.

Believing the Near and Middle East to be within the sphere of American interests, the Pentagon is trying to increase its military presence in the Indian Ocean and

Persian Gulf. With this goal in mind, it is suggesting creation of the Fifth Fleet, consisting of several dozen ships, including aircraft carriers. Its principal zone of operations will be the Arabian Sea, the Persian Gulf, and the Gulf of Aden, and its main base is to be on the island of Diego Garcia, which is to be the third corner of the strategic "triangle of bases" (Simonstown, UAR and Cockburn Sound, Australia). History's largest U.S. naval grouping has already been created in the vicinity of the Persian Gulf, intended to be used against the national liberation movement of the peoples of this region. It is being actively used in provocations against the Islamic revolution in Iran. Moreover the Pentagon plans to use, in crisis situations in this region, two air bases and one naval base in Sinai, returned to Egypt by Israel, two air bases to be built in Israel's Negev desert, a base on the island of Masira belonging to Oman, and others.

The undeclared war of American imperialism and Beijing hegemonists against democratic Afghanistan is of special danger to peace. In addition to Pakistan, where American dollars arm bands of mercenaries trained by instructors from the USA and China, Washington proposes using military bases in Oman, Kenya, Somali, and other countries of the region for its plans.

In accordance with the American conception of "armed intervention outside the sphere of NATO", on 1 March 1980 the Pentagon announced creation of interventionist forces-- a "quick reaction corps" with a strength of over 100,000 men; the Near and Middle East are felt to be the most probable regions of its use.

American imperialists are not forgetting their interests in Asia and in the Pacific. As an example Defense Secretary H. Brown openly declares "the need for digging in at new lines in Asia, strengthening our military power there and acquiring new allies." It is no accident that the USA now calls not only Tokyo and Seoul but even Beijing the "foundation bloc" of its strategy in this region. Moreover the idea of creating a military-political bloc consisting of the USA, Japan, South Korea, and China has been making the rounds recently.

Political and economic actions of American imperialists in Asia and the Pacific are being supported by further growth of American armed forces groupings in these areas. Their strength is now more than 150,000 men just in the Western Pacific and the Indian Ocean.

The Seventh Fleet is called upon to play a special role in implementing the policy of dealing "from a position of strength" in the Pacific. It possesses more than 50 ships and artillery vessels, including multi-purpose aircraft carriers, guided missile cruisers, and destroyers. The 3d Marine Infantry Division (Okinawa, Japan) and amphibious forces of the 7th Fleet (an attack helicopter carrier, a helicopter landing ship, three tank landing ships, and other resources), based at naval bases in Japan and the Philippines, are the principal forces to be used in the invasion of foreign territories in this region.

The United States believes that it can strengthen its positions in the Pacific by activating the aggressive ANZUS bloc and by encouraging ASEAN members to cooperate militarily with the Pentagon. In the Pentagon's opinion, military bases on the islands of Micronesia and on Guam must represent an important strategic line, from which the USA intends to exercise control over sea routes leading to the Indian Ocean.

But a description of the USA's expansionist desires would be incomplete without an examination of its intentions on the African and Latin American continents.

The United States believes Africa to be a key region controlling the routes from the Indian Ocean to the Mediterranean Sea and the Atlantic, and a rich source of strategic raw materials. Emphasizing the importance of the African continent, former Chairman of the U.S. Joint Chiefs of Staff General Brown openly admitted that the United States was devoting the most persistent attention to Africa. Plans for intensifying pressure upon countries of this continent were discussed, for example, at a Washington meeting of the NATO Council in May 1978, during which the U.S. President actively lobbied for inclusion of Africa into the sphere of operations of the North Atlantic bloc, and in which he did not reject the possibility of an alliance with Beijing (mainly in regard to the struggle against the national liberation movement).

As foreign military specialists emphasize, the Pentagon is suggesting the idea of creating so-called "inter-African security forces" intended as a means for perpetuating reactionary regimes and defending American interests in Africa. Demonstration of military presence on this continent is assigned mainly to forces of the Atlantic Fleet.

The Latin American continent is another traditional sphere of influence of the USA. According to estimates by foreign specialists, Latin America provides 100 percent of the American imports of bauxite, more than 50 percent of the oil, 75 percent of the graphite, and 40 percent of the tungsten and lead. The Pentagon views the Latin American countries as an important strategic region covering the southern flank of the USA.

Owing to the cooperation of its proteges (pro-imperialist politicians and military officials), the United States now has up to 50 military facilities of various purposes in Latin America, to include naval and air force bases.

The military base at Guantanamo, Cuba (116.5 km² of land and 37 km² of territorial waters), at which ships and airplanes of the U.S. Air Force and Navy are permanently based, occupies a central place in the plans of American imperialism. This base is one of the centers for organizing aggressive acts against socialist Cuba and other progressive countries in the region.

The USA's aggressive policy of dealing "from a position of strength", which harbors the threat of nuclear disaster, is countered by the Soviet Union and other countries of the socialist fraternity with the policy of dealing from a position of reason, a policy leading not to cold war but to consolidation of universal peace for the good of all peoples. Strengthening the fighting power of the Soviet Armed Forces, the CPSU and the Soviet government are doing this with a single goal--insuring the security of our country, our allies, and our friends. This was once again confirmed with full resolve at a conference of the Political Consultative Committee of the Warsaw Pact members, held in May 1980.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. GROUND FORCES 'ACTIVE DEFENSE' CONCEPT

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 27-33

[By Colonel N. Glebov and Major O. Milov: "'Active Defense' of the U.S. Army Division"]

[Excerpts] Having openly declared a militant course in foreign policy, the military-political leadership of the USA is outfitting its ground troops with modern weapons and combat equipment at an accelerated pace, and it is improving their operational-tactical training and organizational structure with the aim of raising the fighting power of the formations and units.

Examining its plans for preparations for an aggressive war against the Soviet Union and other socialist states, the American command is reviewing its viewpoints on the possible way combat activities will be initiated and conducted in different theaters of war, especially in Europe.

Articles touching upon the theoretical issues associated with organizing and conducting the combat activities of American troops and their NATO allies in Europe have recently begun appearing in American periodicals. The theory of so-called "active defense" is interesting in this aspect. Such defense, in the opinion of American military experts, is to be employed in the course of combat activities during the initial period of war in the European theater against superior forces, and mainly the tank and mechanized formations and units of the probable enemy. As the American command sees it, "active defense" essentially means that before the enemy begins his offensive, when his intentions and especially the axis of his main thrust are unknown, defending troops deploy themselves relatively uniformly along the entire front of defense. When the enemy begins his offensive, and as the axis of his main thrust reveals itself, under artillery cover the defenders maneuver their units and subunits boldly and quickly along the front, as well as out of the deployment areas of the reserves, to the threatened axis, thus creating a defense in depth, and the ratio of men and equipment necessary for successful combat activities against a numerically superior enemy, and for retention of the occupied region (Figure 1) [figures not included in this translation].

If the advancing enemy enjoys significant numerical superiority in the \odot zone of the division, for example 10:1 and higher, then after the defending division concentrates its men and equipment on the threatened axis, this ratio may be reduced to not more than 3:1, which in the opinion of the American command would be sufficient

to perform its defense mission. It is believed that achievement of such a ratio would be possible by deploying up to eight battalion-strength tactical groups on the axis of the enemy's main thrust.

The advancing enemy is to be destroyed by continual fire against his concentrating units and subunits within the sector of advance of the main forces, and by combat activities conducted not at a single line but throughout the entire depth of the division's main defense area, from a number of combat positions occupied by its units in succession.

It becomes obvious from these general premises that in the opinion of American military experts, the mobility of the defending troops, which permits concentration of the needed men and equipment in the decisive place and in limited time, acquires priority significance in "active defense". The knowledge of the terrain must be good as well, and it must be utilized properly in the course of defensive combat.

It is noted in military periodicals that troop formations of battalion and division strength are capable of conducting "active defense".

The division creates a combat formation (Figure 2) with the following elements for "active defense": covering forces, an assault echelon (brigades deployed in the main defense area), a combined-arms reserve, a divisional field artillery grouping, a divisional antiaircraft grouping, and antitank, engineering, and chemical (special) reserves. It may be reinforced by a brigade of field artillery containing up to five artillery battalions (three 155-mm and one 203.2-mm self-propelled howitzers, and one 175-mm self-propelled gun), an engineering battalion, and other resources. Combat activities are usually supported by tactical aviation, which must perform 100 and more sorties per day.

Thus, the foreign press notes, the new theory of organizing and conducting the defensive actions of the U.S. Army's formations in the initial period of a conventional war in the European theater differs significantly from that of static and mobile defense. It is emphasized that in the traditional forms of defense (mobile and static), the success of combat is directly dependent on the accuracy with which the axis of the attacker's main thrust is determined: If this axis is determined correctly (on the basis of an estimate of the probable nature of the enemy's actions), then the created troop grouping may utilize its potentials successfully. In the opposite case, being assigned to a particular area, the troop grouping can be bypassed by the attacker on its flanks, and defeated. In the opinion of American military experts, an "active defense" is devoid of such mistakes, inasmuch as it is capable of reacting to the enemy's actions and opposing him with a defensive, deeply disposed grouping of men and equipment created on the basis of an estimate of the enemy's real actions in the course of combat.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. GROUND-BASED CRUISE MISSILES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 43-45

[Article by Candidate of Technical Sciences, Colonel I. Mikhaylov, and Captain 2d Rank K. Kostin]

[Text] Recent events graphically demonstrate that there are influential imperialist circles in the West striving to return the world to the cold war era. The blame for this, emphasized CPSU Central Committee General Secretary, Chairman of the Presidium of the USSR Supreme Soviet Comrade L. I. Brezhnev in his replies to questions from a PRAVDA reporter, "lies with the imperialist forces, and mainly certain circles in the USA. With those who see relaxation of tension as an interference to their aggressive designs, to incitement of militant psychosis, and to interference in the internal affairs of other peoples."

Striving to justify their course of increasing military potential and of achieving superiority in arms, reactionary officials of the West are promoting the false thesis of a "Soviet military threat" and of Soviet military power "exceeding the needs of defense". Sharply rising military allocations of the USA and its partners in the aggressive NATO bloc make up the material foundation of this course.

American imperialist circles award a special role to West Europe in their militant preparations. Under the false slogan of "protecting" West Europe, which no one has attacked and no one intends to attack, the USA is transforming it into a launching pad for its medium-range nuclear missiles.

Rejecting the peace initiatives of the Soviet Union and other countries of the socialist fraternity, on 12 December 1979 NATO's military planning committee adopted a decision to deploy 464 ground-based cruise missiles and 108 Pershing-2 ballistic missiles in some countries of West Europe by 1983. Cruise missiles are to be deployed in the FRG, Great Britain, Italy, Belgium, and The Netherlands, while Pershing-2 missiles are to be located only in the FRG which, according to the designs of the Pentagon, must become the main launching pad of nuclear missiles aimed at the Soviet Union. This decision quite obviously reflects the desire of the NATO war machine, and the USA at its head, to begin a new spiral in the arms race, thus disturbing the balance of forces that has evolved in Europe between the countries of this aggressive bloc and the Warsaw Pact.

Ground-based cruise missiles will be carried by mobile transporter-launchers (carrying four cruise missiles each) in special hermetically sealed containers. Organizationally, the cruise missile subunits are to be brought together in detachments, each of which will possess four launchers (16 missiles in all) and two launch control centers. According to foreign press reports permission has been granted to deploy cruise missiles on the territories of Great Britain (10 detachments and 160 missiles), the FRG (6 and 96), and Italy (7 and 112). Belgium is to make a decision on this issue in June 1980, and The Netherlands are to make their decision in December 1981.

According to data published in the foreign press, ground-based cruise missiles differ little in principle from the sea-based Tomahawk cruise missile, and they are essentially a modification of the latter. The basic characteristics of the cruise missile are: length 6.4 meters, wing span 2.54 meters, take-off weight 1,000 kg, range 2,500 km, maximum speed 880 km/hr, nuclear warhead power 150-200 kilotons.

A ground-based cruise missile is launched from the container in which it is stored. After it is launched its wing and stabilizer deploy, the launching booster separates away, and the missile continues to fly with the assistance of a turbofan engine (thrust 270 kg, unit fuel consumption 0.7 kg/kg·hr).

The missile has a combined guidance system which includes an inertial system and a system that corrects the trajectory on the basis of topography--the TERCOM. The latter makes use of a radar altimeter that keeps track of the topography beneath the missile's trajectory. These data are compared with topographic information stored in an onboard computer, thus making it possible to determine the actual location of the cruise missile with great precision (the radius of probable error is a few dozen meters). Use of another correlation system--SMAC--jointly with the TERCOM in the final leg of the missile's trajectory is foreseen as a means for raising the accuracy of ground-based cruise missiles. This system compares a photograph of the target region, converted into digital form, with images of the terrain constantly transmitted from the missile's optical instruments during its flight over the given region.

In the opinion of foreign experts ground-based cruise missiles, which are characterized by high range and high target striking precision, may be used against objectives located deep in the Soviet Union, which would significantly increase the attacking power of NATO nuclear forces deployed in Europe. According to their estimates, adoption of these missiles would permit the NATO command to relieve some tactical aircraft from their mission of making nuclear strikes against enemy objectives, and to assign them to other missions in the theater of war.

According to the viewpoints of American strategists, ground-based cruise missiles may be used most effectively in the initial stage of an armed conflict for the following objectives: annihilation of missile launchers; destruction of airfields, naval bases, control systems, and antiaircraft resources; destruction of troop groupings, including concentrations of armored equipment; destruction of objectives deep in the Soviet Union and in countries of the Warsaw Pact (bridges, dams, electric power plants, communication centers).

One interesting fact is that the war machine of the USA and other NATO countries is placing its main emphasis in the press on the notion that deployment of cruise missiles in West Europe is a forced measure. This is being done in order to mislead the world public, and mainly the people of the countries in which the cruise missiles are to be deployed. It is clear to all, however, that these cruise missiles will be an offensive weapon, aimed at countries of the Warsaw Pact.

In his speech at a solemn meeting dedicated to the 30th anniversary of the GDR, Comrade L. I. Brezhnev declared in this regard that "the dangerous plans for deploying new types of American nuclear missiles in West Europe are causing considerable anxiety. Let me frankly state that implementation of these designs would significantly change the strategic situation on the continent. The goal of these plans is to disrupt the balance of forces that has evolved in Europe, and to insure military superiority for the NATO bloc.... In such a case we would have to take the necessary additional steps to reinforce our security. We would have no other choice. But one thing is completely clear: Implementation of NATO's plans would unavoidably aggravate the situation in Europe, and in many ways it would poison the international atmosphere in general."

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PERCEPTIONS, VIEWS, COMMENTS

U.S. AVIATION COMBAT EFFECTIVENESS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 45-50

[Article by Major V. Lyakhov: "An Assessment of the Effectiveness of Aerial Combat Activities"]

[Excerpts] Expanding its program of war preparations, aimed mainly against the USSR and other countries of the socialist fraternity, the Pentagon is devoting considerable attention to raising the effectiveness of the combat activities of tactical aviation. It is constantly improving its airplane fleet with this purpose in mind.

In addition to supplying the units and subunits with the latest tactical fighters, the F-15 and F-16, and A-10 ground-attack aircraft, the air force is modernizing its existing F-4 and F-111 warplanes. In recent years the U.S. Air Force has received a new generation of air-to-ground guided weapon systems exhibiting higher target accuracy (for example the Maverick guided missile, GBU-15 guided bombs, antiradar missiles). In addition more-effective weapons system specifically adapted to hit accumulations of armored equipment, motor vehicle columns, and other objectives are being developed as a supplement to the existing Rockeye cluster bombs.

However, American military experts believe that in addition to supplying improved weapon systems and combat equipment to tactical aviation, the tactics themselves must be improved as a means for raising the effectiveness of its combat activities. In their opinion the effectiveness of aviation in general depends in many ways on the concrete combat situation, the nature of aviation's missions, and the means of their execution.

This article, written on the basis of information published in the foreign press, gives the point of view held by American experts on the method for determining the effectiveness of tactical aviation in application to the European theater of war (depending on the sort of air-to-ground weapon employed) when providing direct air support to ground troops, and when isolating a region of combat activities.

The main task of tactical fighters providing direct air support is believed in the USA to be striking enemy troops throughout the depth of their assault echelon, and penetrating groupings, with the goal of blocking further exploitation of a breakthrough.

In the opinion of American strategists, the military conflict in Europe would be fluid in nature, and in such a situation strikes against faraway reserves would not swiftly influence the balance of forces on the battlefield (though they would significantly affect the course of combat activities in protracted wars). Therefore in isolating a region of combat activities, tactical aviation would have to channel its main efforts into striking divisions of the enemy's back-up echelon, and his mechanized and tank formations in their concentration areas, and on the move. In this case tactical fighters may be massed, and used at maximum speed; a possibility would also arise for using weapons intended to strike area targets, which is difficult as a rule in the course of close air support due to the danger of hitting one's own troops. Moreover, as was noted in the foreign press, the need for ground forward air controllers will drop significantly, the number of contacts with them will decrease, and aviation control will become simpler.

However, this may create a need for deeper penetration of enemy airspace by the airplanes, which would mean that they would encounter stronger opposition from the enemy's antiaircraft forces and resources.

Considering all of the above, American military experts have developed several different methods for assessing the combat possibilities of their tactical aviation in strikes against ground targets, so that the resulting data could be used to compare the effectiveness of a particular weapon system in different situations, develop new requirements on the weapon and the methods of its use, and check these methods out in various tests and exercises.

American experts believe that the combat effectiveness of tactical aviation in different situations, the directions of weapon development, and the methods of weapon use can be forecasted rather accurately on the basis of such figures (with the condition that more-accurate characteristics of the weapon system, of enemy anti-aircraft countermeasures, of crew training levels, and of equipment dependability, and other parameters are used). In particular, using the method described above, they concluded that combined use of ammunition exhibiting high guidance accuracy and ammunition intended specifically against area targets would be the most optimum variant of the use of air strike resources in the course of direct air support in European theaters of war. It is believed in this case that the former would best be used against the enemy's dispersed defensive combat formations, and the latter should be used against concentrated attacking forces, especially on the axis of the main thrusts of the enemy's armored groupings, and against troop accumulations at tactical depth.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. AVIATION ELECTRONIC WARFARE

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 50-54

[Article by Engineer-Senior Lieutenant A. Bokov: "Development of the Electronic Warfare Resources of U.S. Tactical Aviation"]

[Excerpt] In the opinion of foreign military experts, the combat possibilities of aircraft and antiaircraft systems depend, at the present stage of technological development, on the characteristics of the electronic and electron-optical resources making them up. The purpose of electronic warfare (EW) is to reduce their effectiveness, or to completely preclude their use by the enemy. Use of onboard EW resources significantly raises the survivability of aircraft. Thus according to estimates of experts in the U.S. Air Force, losses of American planes flying a combat sortie to targets of a probable enemy may be 20 percent if EW resources are not employed, while when they are applied, the losses could be reduced to 2-3 percent.

The Pentagon's enormous expenditures to develop and acquire new electronic warfare resources are a confirmation of the attention devoted to EW in the USA: According to foreign press reports the air force allocations for these purposes in 1979 were \$950 million.

The basic directions of development of EW resources for American tactical aviation are examined below on the basis of data cited in the foreign press.

The direction development of EW apparatus takes depends mainly on the sort of electronic equipment the probable enemy possesses, the conditions of its application, and the possibilities of modern technology in electronics.

From a technical standpoint the unique features in the development of electronic antiaircraft weapons today are constant expansion of the range of working frequencies (due to assimilation of the high frequency portion of the electromagnetic spectrum), growing resistance to interference, and ever-broader use of electron-optical resources.

These features, in the opinion of American experts, are what define the basic trends in development of tactical aviation's EW: provision of EW resources of various functions to all combat aircraft, including helicopters; widespread use of electron-optical countermeasures; use of digital computer technology; the modular principle

in the design of EW resources, and their operation on the basis of programs; expansion of the range of frequencies utilized; development of the software of EW resources and of the methods of their use.

Back in the time of the USA's aggressive war in Southeast Asia, when the quantity of guided antiaircraft weapons was limited and their types were few in number, the Americans believed it sufficient to outfit their airplanes with simple detecting receivers permitting the pilot to perform an evasive maneuver in time, and only some aircraft were supplied with jamming apparatus.

The experience of combat activities in the Arab-Israeli wars showed that new, more-complex electronic antiaircraft resources appeared in the troops: monopulse and Doppler-pulse radar stations, and stations emitting continuously. Judging from foreign press reports, this is what predetermined the basic American conception of electronic warfare for U.S. tactical aviation, according to which two forms of airplane protection are foreseen--group and individual.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. SUBMARINE DEVELOPMENTS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 59-66

[Article by Captain 1st Rank V. Konstantinov]

[Text] Vigorously raising a provocative racket around the mythical "Soviet military threat", the ruling circles of the USA are increasing the power of their navy at a forced pace, and they are maintaining it at a high degree of combat readiness. According to the foreign press their principle emphasis is on developing and improving submarines. The command of the U.S. Navy believes submarines to be one of the principal resources of combat at sea, explaining this by the following factors. First, the covertness of their operation is incomparably greater and their vulnerability is less than that of surface ships. Second, installation of nuclear propulsion units has made them swift, and the range of underwater cruising practically unlimited. Third, the Polaris, Poseidon, and Trident ballistic missiles (in addition to traditional torpedoes and mines), SUBROC antisubmarine guided missile systems, the Harpoon guided missile system, and, in the next few years, Tomahawk cruise missiles have considerably increased the striking capabilities of submarines, permitting their active use against submarines, ships, and vessels, and against ground objectives deep within enemy territory.

According to foreign press reports, as of the beginning of 1980 the American Navy possessed 121 submarines, including 41 atomic missile submarines, 73 atomic torpedo submarines, and 7 diesel submarines. Their tactical and technical specifications are shown in the table [table not included in translation].

Atomic missile submarines are included in the composition of strategic offensive forces, and they are one of the most important resources American imperialism has for attaining its aggressive goals. They are intended for nuclear missile strikes against administrative and industrial centers, bases, ports, airfields, communication centers, and other objectives.

The military-political leadership of the USA is turning special attention to the development and improvement of atomic missile submarines. It is allocating enormous assets to develop new submarines and ballistic missiles for them, and to raise the combat effectiveness of the existing systems.

In the two decades in which the submarine nuclear missile system has been around, five generations of missiles and four missile carriers have been created. According

to foreign press figures American missile submarines performed more than 1,800 combat patrols during this time.

The Polaris submarine nuclear missile system was built in 1957-1967, during which time 41 atomic missile submarines of three classes were built: five "George Washington", five "Ethan Allen", and 31 "Lafayette" (some Western military experts break the last series of submarines down into two subclasses: "Lafayette"--9 units, and "James Madison"--22).

"George Washington" class atomic missile submarines were designed on the basis of "Skipjack" class atomic torpedo submarines; a central section about 40 meters long was added to the hull to house 16 ballistic missile launchers, a missile launch control system, navigational equipment, and auxiliary mechanisms. These atomic missile submarines were outfitted with Polaris A1 missiles with a range of about 2,200 km. The missile's multiple warhead carried a nuclear charge with power of up to 800 kilotons. The first submarine of this series went out on combat patrol in November 1960.

In 1964-1967 the "George Washington" class atomic missile submarines underwent overhaul, during which time the reactor's core was replaced. They were simultaneously rearmed with Polaris A3 missiles with a range of about 4,600 km and a dispersing warhead (containing three nuclear reentry vehicles with a power of up to 200 kilotons each). The compressed air missile launching system was replaced by a steam launching system, and the Mk80 missile control system was replaced by the more sophisticated Mk84 system.

"Ethan Allen" class missile carriers, which were built on the basis of specially developed plans, are distinguished from the first American atomic missile submarines by their somewhat greater dimensions, and a deeper diving capability corresponding to that of "Permit" class atomic submarines (down to 270 meters). They were initially armed with Polaris A2 missiles, and later they were supplied with missiles of the next modification (Polaris A3).

All 10 atomic missile submarines carrying Polaris A3 missiles (five "George Washington" and five "Ethan Allen" class submarines) are in the Pacific Fleet; combat-ready submarines are all assigned to the 15th Squadron, based at Apra Harbor (Guam).

Because these atomic missile submarines have already served their 20-year useful life, the Pentagon has declared its intention to withdraw them from the strategic offensive forces in the next few years, and to remove their Polaris A3 missiles; however, the submarines themselves (at least most of them) will remain in the navy, and they will be used for some time as cruise missile carriers.

"Lafayette" class atomic missile submarines (Figure 1) [figures not included in translation], which were built in 1961-1967 and have been the largest submarines possessed by the NATO navies, are the foundation of modern sea-based nuclear missile forces. During their construction, special attention was turned to reducing noise. They possess auxiliary diesel engines and snorkels. A possibility for modernizing these systems was foreseen in the plans. Such modernization was performed in 1970-1977 when Poseidon C3 missiles were installed in place of Polaris A2 (eight submarines) and A3 (23 submarines).

According to foreign press reports the Poseidon C3 surpasses its predecessor in relation to many characteristics. Owing to larger dimensions and greater take-off weight (about 29.5 tons) it can carry a MIRV separating warhead with 10-14 individually guided reentry vehicles. Its firing accuracy has been doubled.

Following modernization of atomic missile submarines in the Poseidon program, the American press emphasized, about 55 percent of the nuclear warheads of the USA's strategic arsenal were carried by atomic missile submarines.

Submarines outfitted with Poseidon C3 missiles are operating as part of the USA's Atlantic Fleet, and they have been organized into three squadrons. The 14th Squadron (Great Britain), in summer 1979 the 16th was transferred from the Rota Naval Base (Spain) to Kings Bay (on the east coast of the USA, in Georgia), and the 18th is located at Charleston Naval Base (South Carolina).

From these points, the missile submarines patrol the waters of the Atlantic and Mediterranean, while submarines stationed at Apra patrol the Western Pacific. The duration of their cruises is about 70 days. Almost 55 percent of the total number of atomic missile submarines are always at sea. During patrols, the missile complex is kept constantly ready for immediate use. Missiles are to be launched mainly from under water, at depths down to 30 meters.

After finishing their combat patrols, the atomic missile submarines return to their bases, where in the course of 28-30 days the crews are exchanged (two crews are assigned to each submarine, taking turns going out on patrol), repairs are made, and reserves are replenished. Maintenance is provided from floating bases specially intended for this purpose. Moreover there is a floating dock located at the base as a rule.

The planned life of "Lafayette" class missile submarines is 25 years. The possibilities for increasing it to 30 years are now being studied. It is believed in this case that the Poseidon C3 missiles will remain aboard most of the submarines, and that 12 of them will be rearmed with new Trident 1 missiles in the next 2 or 3 years.

The first of them ("Francis Scott Key") has already been outfitted with such missiles, and in October 1979 it went on combat patrol. This was preceded by many years of work in the Trident program having the goal of improving the strategic submarine nuclear missile system.

This program foresees creation of, initially, a three-stage missile, the Trident 1 (with a range of about 8,000 km) and, in the future, Trident 2 (over 11,000 km). The overall dimensions of Trident 1 permit its installation aboard both the latest atomic missile submarines of the "Ohio" class, presently being built in such a way as to permit installation of larger missiles later on, and aboard existing missile submarines.

Arguing in behalf of this program back in the late 1960's, the command of the U.S. Navy emphasized that its implementation would help to raise the viability of the submarine nuclear missile system, inasmuch as outfitting missile carriers with long-range missiles would allow them to patrol in direct proximity to the U.S. coast--in regions covered by permanent and mobile antisubmarine resources, where the enemy's use of antisubmarine weapons would be effectively reduced. It is also believed that keeping atomic missile submarines close to the American continent would simplify their control.

Much attention was devoted during the planning of "Ohio" class missile submarines to raising their combat capabilities, viability, and their stability. A significant increase in displacement and basic dimensions made it possible to increase the number of ballistic missile launchers from 16 to 24, to reduce noise in various ways, to improve self-defense resources, and to foresee extra space inside the hull.

One of the important steps taken to reduce noise was the use of an atomic reactor of new design, in which the heat carrier circulates naturally. It is concurrently noted that the noise produced by submarines has been significantly reduced by excluding the noisy main circulation pumps from the system. Other steps taken include broad use of soundproofing materials covering not only the mechanisms and equipment itself but also the points of its attachment to the decks and bulkheads. In addition to large-sized equipment producing a relatively high level of noise, small pumps, compressors, and other machine units of various purposes are used in "Ohio" class missile submarines in low-noise travel mode.

The AN/BQQ-6 sonar complex is installed aboard "Ohio" class atomic missile submarines. Mk48 torpedoes and Harpoon antishipping guided missiles will be used as tactical weapons. The Mk118 system--an improved variant of the system aboard "Los Angeles" class atomic torpedo submarines--has been designed for fire control.

New missile submarines are being built by General Dynamics at the ship building wharves at Groton (Connecticut). The wharves were rebuilt in connection with the beginning of construction of the largest submarines in the history of foreign ship building: An indoor assembly shop was built, an outdoor assembly platform was fitted out, a pontoon ship building dock was erected, and two 280-ton bridge cranes, one 300-ton portal crane, and one 100-ton tower crane were installed. New construction procedures employing a block-and-section method were developed as well. According to the experience of building the prototype atomic missile submarine, it takes about 2 years from the beginning of construction to the so-called "laying down" stage; hull fittings are manufactured and equipment is acquired during this time. By the laying down stage, according to official data, 20 percent of the total volume of ship building jobs are completed, and laying down itself marks the beginning of assembly of individual sections of the hull, and installation of the mechanisms, machine units, instruments, and pipelines. As an example construction of the "Ohio" began back in 1974, and the laying down stage fell in April 1976. After 3 years this submarine was launched, and it is now undergoing its final preparation. Running trials are expected to begin this summer, and by the end of the year the submarine should be transferred to the navy. It will participate in its first combat patrol in 1981. The delay in fulfillment of construction plans is about 2 years.

Today, judging from reports in the American press, three missile submarines of this class are now being assembled (Figure 2), another three are in the initial stage of construction, and an order for an eighth submarine is to be submitted in summer of this year. In all before 1984, the U.S. Navy intends to finance construction of 13 atomic missile submarines. The cost of one such ship is \$1.5 billion. The total number of new atomic missile submarines has not been determined, but according to various estimates of foreign experts, there may be 25-30 of them (600-720 launchers).

The first ten atomic missile submarines are in the 17th Squadron, which will be based at Bangor (Washington), where a center to train crews for them has been built,

and where erection of a repair and construction complex with a drydock, a ballistic missile loading and unloading pier, and administrative and residential buildings is continuing. The work will go on for a few more years because the current plans call for completion of construction of 10 submarines in 1987.

It is believed at the Pentagon that atomic missile submarines of the "Ohio" class will run for 9 or 10 years without overhaul, and out of the 30 years of their life, they will spend about 56 percent of the time at sea.

Atomic torpedo submarines are the main forces of the fleet. Their missions are: combating enemy submarines (mainly atomic missile submarines); defending friendly missile submarines in their patrol areas and during sea crossings; annihilating enemy surface ships and vessels; providing antisubmarine defense to carrier formations and groups, warship detachments, assault landing detachments, and convoys; active mine-laying; reconnaissance.

The foreign press emphasizes that imposition of so many missions upon them became possible owing to installation of nuclear power plants, which have transferred submarines into real underwater ships capable of operating beneath the water for long periods of time.

America's first atomic submarine, the "Nautilus", was transferred to the navy in 1954, and it was retired from the fleet at the end of 1979. It had an underwater displacement of 4,040 tons and an underwater speed of 20 knots. Modern torpedo submarines are distinguished by even greater displacement, lower noise, higher speeds, and more-powerful armament.

The USA's general-purpose submarine forces consist today mainly of atomic submarines of the "Permit", "Sturgeon" (Figure 3), and "Los Angeles" classes. They are armed with dual-purpose (antishipping and antisubmarine) Mk48 torpedoes (range 46 km, speed above 90 km/hr), and SUBROC antisubmarine missiles (range about 90 km, nuclear warhead). They are also being armed with Harpoon antishipping missiles (range above 90 km).

Building a large series of "Los Angeles" class torpedo submarines (40 units), the naval command intends to increase the number of operational atomic submarines to 90. The 5-year ship building program for 1981-1985 foresees completion of the development of a new class of atomic torpedo submarines, FA-SSN, and financing their construction. According to the Pentagon, this submarine is to be distinguished from "Los Angeles" class submarines by a lower displacement (mainly with the purposes of making construction cheaper), though it should retain its high combat capabilities.

Diesel submarines are a subclass with few representatives: There are only eight (built in the 1950's). They are all presently operating as part of the Pacific Fleet. Further construction of diesel submarines was abandoned because shipboard nuclear power plants were starting to undergo swift development in those years, and the Pentagon concentrated its efforts on creating an atomic submarine fleet as quickly as possible. In addition they have been built by European NATO countries, and their construction is continuing today. Thus the command of the U.S. Navy hopes that missions within the capabilities of diesel submarines would be assigned to the navies of allied NATO countries.

Nevertheless American publications do carry articles in which the authors appeal to the Pentagon to review their attitude toward submarines with conventional power plants. It is emphasized in this case that while modern atomic torpedo submarines cost more than \$450 million, diesel submarines cost less than \$100 million, and two diesel submarines are supposedly equivalent to a single atomic submarine in terms of their effectiveness, particularly in relation to antisubmarine lines.

The proponents of resuming construction of diesel submarines believe that they will find uses on the condition that they are deployed beforehand at forward bases for antisubmarine warfare, and for annihilation of enemy surface ships in landlocked seas and coastal oceanic regions.

In the opinion of some foreign experts the diesel submarines of the future will probably be similar to "Barbell" class submarines in terms of their displacement and basic dimensions; they should have an underwater speed of about 20 knots, an independent cruising time of 90 days, six torpedo launchers, and not less than 45 weapon units (torpedoes, mines, cruise missiles). They should be outfitted with modern AN/SQR-21 sonar sets. It is also believed that owing to modern construction and maintenance methods, diesel submarines of the future will be able to operate for 5 years without overhaul (this period usually does not exceed 2 years for existing submarines).

The brief survey, presented above, of foreign press reports on the status and prospects for development of submarines in the USA, and mainly atomic missile submarines, once again demonstrates that the Carter administration, in keeping with the interests of the military-industrial complex, is continuing its upward spiral in the race of nuclear missile arms, thus threatening the peace and security of peoples.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. AIRCRAFT CARRIERS: SERVICE PROCEDURES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 7, Jul 80 (signed to press 8 Jul 80) pp 68-71

[Article by Engineer-Captain 1st Rank (Reserve) B. Osipov and Engineer-Captain 2d Rank A. Fedurin: "Aircraft Technical Maintenance and Repair Aboard Aircraft Carriers"]

[Text] Implementing the militant course of the country's ruling circles, the command of the U.S. Navy is constantly raising the combat readiness of deck-landing aviation. In the opinion of American military experts, successful completion of this task would require, in addition to other measures, the following in particular: enlargement of allocations for technical maintenance and repair; continual improvement of the organization and planning of logistical support; completion of jobs aimed at raising the combat readiness of different types of airplanes and helicopters. As an example work of this sort done over a period of 22 months raised the combat readiness of F-14's by 24 percent.

The requirements on improving the methods of controlling and conducting technical maintenance on aviation equipment grew dramatically in the early 1950's, when a new generation of airplanes began to enter naval aviation (the F-4 Phantom, the A-6 Intruder, the A-5 Vigilant, and the A-7 Corsair). The number of technical personnel required for maintenance and repairs had to be increased significantly. The demand for financial allocations, spare parts, and various materials grew, and the need arose for improving auxiliary equipment. Thus in 1977, according to the American press the outlays on operation and on material-technical maintenance of the A-7E, F-4J, and F-14A were, correspondingly, \$0.874 million, \$0.9 million, and \$1.4 million.

A program of technical maintenance of deck-landing aviation, the NAMP (Naval Aviation Maintenance Program), was developed for the purposes of maintaining naval airplanes in high combat readiness, and it has been in effect since 1959. It basically calls for integrated maintenance and repair of aviation equipment, insuring high combat readiness and a decrease in the number of flying accidents.

In each particular case, the program defines the sort of repairs that would simultaneously raise the technical readiness of the airplanes and insure effective use of labor and material resources. It presupposes strict planning, selection of optimum methods for inspecting and maintaining the equipment, selection of the best assembly methods and procedures, and analysis and practical introduction of operating experience. The functions and responsibilities of squadron technical maintenance

subunits in the air wings have broadened significantly. The advent of new airplanes, growth in the requirements on technical maintenance, and development of new maintenance principles require occasional correction of the program.

The NAMP foresees three categories of technical maintenance and repair of aviation equipment.

The first consists of planned preventive inspection and repair. The jobs are performed in a hangar. This category usually includes technical inspection (preflight and postflight, periodic, special, and general) and performance of adjustment operations, during which certain small parts and various units that have broken down or served to their rated time are replaced.

The second includes technical maintenance and repair. These jobs are performed in the repair shops of the aircraft carrier, and they involve removal of equipment from airplanes, its repair or replacement of worn or damaged parts and units, manufacture of lacking spare parts in extreme cases, calibration and testing of aircraft systems following their repair, and inspection of auxiliary equipment.

Eighty-five percent of all funds allocated to the maintenance of deck-landing aircraft are spent in the first two categories of technical maintenance and repair.

The fifth category--plant repair--is performed by aircraft repair enterprises located at naval air bases, and more rarely by private firms. Units and machine units that cannot be repaired aboard aircraft carriers due to the absence of the necessary technical base are sent to such plants.

In 1965 the naval command began introducing a standard system of aircraft technical maintenance and repair, one including subsystems for collection of data on material-technical support, and for consideration of labor outlays on technical maintenance and the state of the equipment. This system foresees introduction of certain standards on the use of technical personnel assigned to aircraft technical maintenance and repair. The 40-40-20 formula was established; according to it, out of the total number of man-hours devoted to technical maintenance and repair of a certain number of aircraft, 40 percent should be spent on equipment maintenance and repair itself, 40 percent should be spent on observation of the work done and inspection of its quality, and the remaining 20 percent should consist of nonproductive outlays (training and exercises, leaves, illness, losses associated with disciplinary sanctions, and so on). If the report data indicate a violation of this formula, the command must take steps to correct the disproportions in the labor outlays.

The nature of the repair jobs performed aboard an aircraft carrier may be judged from technical maintenance and repair of aircraft engines. Specialists check out the engines and their systems, they determine the tightness of fuel systems and pumps, and they perform necessary repairs on certain units and parts. After technical maintenance and repair, the engines undergo tests (for about 40 minutes) on special stands. If the test results are favorable, the engine is cooled and transferred to the hangar for installation aboard the aircraft.

About 100 man-hours are spent on these tests and on installation of a new engine, and 300-400 man-hours are spent on repair of an engine, to include disassembly of the principal units, and the subsequent bench tests. Such work is performed only

in the repair shops of the aircraft carrier. The engine is checked out every 200 flying hours.

Technical maintenance and repair of aviation equipment is performed aboard an aircraft carrier by the men and equipment of special maintenance groups within the composition of the air wing's squadrons, as well as by the aircraft carrier's own departments (the aviation equipment technical maintenance and repair department, the gunnery department, and the aviation department). In addition, the aircraft carrier has its own supply service.

Technical maintenance and repair groups (Figure 1) perform planned preventive inspections, and technical maintenance and repair of aircraft (category 1). A significant proportion of the air wing's personnel, totaling about 3,300 persons, is contained in these groups.

The aircraft's department of aviation equipment technical maintenance and repair (aircraft repair department) does its work in the ship's shops (category 2). It is composed of battalions responsible for repair of airframes and engines, special equipment, and armament, and for repair quality control.

Such a department has 10 repair shops and laboratories at its disposal. They include engine repair shops containing the necessary benches for testing the airframe, hydraulic and pneumatic equipment, landing gear, electronic equipment, armament, storage batteries, and rescue equipment, aircraft tire vulcanizing shops, and auxiliary equipment repair shops.

A significant increase in the dimensions of compartments intended for aircraft technical maintenance and repair can be noted. In the 1950's-1960's they nearly doubled, and aboard aircraft carriers built in the 1960's, their total area was 3,400-4,000 m². The bulk of the personnel of the aviation equipment technical maintenance and repair department are squadron technicians and mechanics temporarily assigned to this department by their home units and working under the guidance of its specialists. Moreover there are specialists who keep track of aircraft flying hours and equipment breakdowns, monitor fulfillment of technical maintenance and repair schedules, and compile reports on fulfillment of maintenance and repair plans. Their responsibilities also include maintaining records on aircraft operation, and participating in aircraft flights and repairs. In order to raise the quality of repairs aboard aircraft carriers, representatives of the aircraft manufacturing companies remain aboard aircraft carriers for several years; these representatives work in the laboratories and shops of the aircraft carrier, and they are assigned to the aircraft repair department.

Divisions of the aircraft carrier's gunnery department provide help to technical maintenance groups in arming and suspending (loading) munitions during repair of aircraft weapons.

The aircraft carrier's aviation department supports the take-off, landing, and taxiing of airplanes on the flight and hangar decks, and their positioning and tie-down on the parking pads. This department contains 550-650 persons (depending on the class of the ship), and presently it consists of four divisions (Figure 2).

The first division (V-1) is responsible for towing (moving) the airplanes on the flight deck to the catapults, and for the positioning and tie-down of airplanes at their parking places on the flight deck. The division personnel inspect the flight deck before flying, and remove small foreign objects from it (pieces of wire, nuts, bolts, and so on), and when munitions and food are taken aboard the carrier, they participate in this work.

The second division (V-2) services the catapults, arrester wires, optical landing systems, and other equipment necessary for take-off and landing, to include the system supplying steam to the cylinders of the catapults.

The third division (V-3) is responsible for lowering (raising) the airplanes to the hangar (flight) deck, and for towing them and tying them down at their parking places. The division personnel are responsible for fire safety in the hangar, and they prepare the hangar deck for taking on ammunition while on the move, repositioning airplanes and various auxiliary equipment as necessary.

The fourth division (V-4) is responsible for fueling and oiling the airplanes, and for keeping the fuel tanks and fueling stations on the flight and hangar decks full. Thus there are 145 main tanks and 16 dispensing tanks aboard the aircraft carrier "Enterprise" with a total volume of 9,500 m³. It has been reported that during a flight day, up to 600 tons of aviation fuel are consumed aboard this carrier. It took about 40 minutes to fuel 31 airplanes aboard the aircraft carrier "Ranger".

The aircraft carrier's supply service provides logistical support to aircraft technical maintenance and repair in categories 1 and 2. It possesses specialized storage compartments containing the basic types of equipment, and three centers: a spare parts invoice accounting center, a center for transportation of spare parts from the storage compartments to the places of aircraft technical maintenance, and a center for automatic processing of technical maintenance information. Computers are employed in the latter to maintain records on spare parts, and to insure quick retrieval and supply of spare parts for airplanes. Spare parts called for on priority may be supplied within an hour.

Together with the command of the air wing and the aviation repair department, the supply service determines the necessary quantity of spare parts for the carrier's storage compartments, with a consideration for the plan for operation of the ship and the air wing, the dependability of equipment, and its life. Data acquired from the subsystem collecting data on material-technical support to the aircraft technical maintenance and repair system are considered in this case as well. In the opinion of naval specialists this area is plagued by serious difficulties, since the list of spare parts needed for aircraft based aboard aircraft carriers exceeds 50,000 names; moreover these parts must be supplied efficiently.

The process of acquiring and storing spare parts is constantly improving. Spare parts are being redistributed from numerous storage compartments located in various areas aboard the carrier to a small number of storehouses located near the shops. However, the area allocated for the supply service's centers and storage facilities is constantly growing. It grew an especially great deal in the mid 1950's, when a decision was made to increase the volume of repairs performed aboard aircraft carriers.

Much attention is devoted aboard an aircraft carrier to organizing and planning aircraft technical maintenance and repair.

Thus a carrier possesses a center for planning aircraft technical maintenance with its own office, and squadron and air wing technical maintenance centers with their own material-technical support offices.

It has been reported in the American press that precise fulfillment of the aircraft technical maintenance and repair plans in accordance with the operating instructions, prompt satisfaction of requests for spare parts and expendable materials, and close interaction between the ship's crew and personnel of the air wing would insure a real possibility for dependable operation of all aircraft systems in the course of combat missions.

The associated problems were worked out in 1971-1973 aboard the aircraft carrier "Enterprise". The air wing command noted that the systems which are supposed to support the mission of the aircraft are not fully operable aboard many aircraft, even aboard those used in combat assignments. Thus pilots lose confidence in some of the systems, and technical maintenance and repair specialists forget how to prepare them for flight. In the end, an expensive multipurpose aircraft designed to perform a number of missions is in fact used for narrower purposes, ones which could have been supported by a relatively cheap aircraft of a previous generation. The opinion is stated that although modern airplanes are very complex in design, they must be prepared for flight in all complex combat conditions, and they should be allowed to fly only with all of the equipment working properly.

Automatic systems for testing and revealing faults in electronic systems, the weapons of deck-landing aircraft, and missiles were introduced in order to facilitate and improve technical maintenance and repair. These systems do not require highly skilled maintenance personnel, they exclude inspection errors, they reduce inspection time, and they permit a significant decrease in the number of specialists. In the last 15 years the U.S. Navy has spent more than \$715 million on creation of these systems.

One such system is the VAST (Versatile Avionics Shop Test), which tests the onboard electronic apparatus of the F-14A, E-2C, S-3A, A-7E, and other aircraft. The preparedness coefficient of the apparatus it services has exceeded 80 percent. There were more than 80 VAST systems in the navy at the end of 1976 (out of 88 ordered), installed aboard seven aircraft carriers and at coastal air bases, where they have been operated intensively (up to 20 hours per day). About \$450 million had been spent by this time on their development and purchase. Owing to introduction of these systems into the navy (with a planned operating time of 20 years aboard 12 aircraft carriers and at 11 coastal air bases), a savings of more than \$1.4 billion is anticipated. This is the result of reduced working space for aircraft technical maintenance, a lower number of maintenance personnel (more than four times lower), smaller quantities of equipment employed, and lower outlays on spare parts. Thus it takes 34 persons to service the electronic apparatus of F-14A, E-2C, and S-3A aircraft with the help of four VAST systems, while use of conventional equipment would require 138.

Another system, BACE (Basic Automatic Check Out Equipment), is intended to test on-board radio-navigation apparatus, electronic warfare resources, and automatic flight control equipment aboard the A-6 Intruder, the RA-5C Vigilant, and others (Figure 3).

American specialists believe raising the repairability and dependability of deck-landing aircraft to be yet another direction for solving the problem of their technical maintenance and repair. As an example easy access has been provided aboard the F-14A to all of its systems, the hatches and doors intended for inspections can be opened with standard tools, maintenance locations in the system are clearly marked, engines are interchangeable, and they may be replaced in relatively short time. A built-in electronic apparatus check-out system monitors the aircraft and weapons systems. The requirements of dependability, reparability, and simplicity of technical maintenance are included among the guaranteed characteristics of the naval F-18 Hornet. As an example total average flying time must be 3.7 hours, and labor outlays must be 1 hour for every 18 hours of flight. These indicators are 1.5-2 times better than those for the A-7E and F-4J. There is a guarantee that three specialists could prepare an aircraft for another sortie in a turnaround time of 15 minutes, and that an engine can be replaced by four technicians in 41 minutes.

In the opinion of naval experts there is also significance to secondary factors such as the availability of auxiliary movable equipment to service the aircraft, of uniforms for specialists of the aviation repair and the technical maintenance and repair divisions, and so on. Thus the aircraft carrier "Saratoga" requires: 18 tractors, 7 movable high-pressure compressors, 9 wheeled hydraulic jacks, 7 movable carts for liquid oxygen containers, 16 movable carts to carry aircraft engines and other cumbersome cargoes, 2 forklifts with a loading capacity of 6.8 tons, and 8 with a capacity of 2.7 tons. While on duty, personnel of each of the aviation repair department's divisions wear uniforms of a particular color with insignias on the chest and back: 1st division--blue helmets and jackets, 2d--green, 3d--blue jackets, white helmets, 4th--purple uniforms.

The insignias differ as well: Specialists of the 1st division wear their service numbers on the front and back of their jackets, in the 2d division personnel servicing the arrester wires have the letter A on the back of their jackets and personnel servicing the catapults have a C, in the 3d division the personnel wear jackets with "Lift Operator" written on the front and back, and in the 4th division the personnel have the letter G on the back of their jackets.

Personnel of the air squadron's technical maintenance groups also wear uniforms of different colors.

FIGURE CAPTIONS

Figure 1. p 69. Standard organization of a squadron department for aircraft technical maintenance and repair in an air wing

Figure 2. p 71. Standard organization of the divisions of an aircraft carrier's aviation repair department (according to the existing organizational table, division V-5 is included within the aircraft carrier's gunnery department)

Figure 3. p 72. Testing aircraft electronic equipment with a BACE system

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PERCEPTIONS, VIEWS, COMMENTS

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Article by Soviet authors and the chronicle were prepared from foreign press sources.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: MILITARY OBJECTIVES AND ATTITUDES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 8, Aug 80 (signed to press 7 Aug 80) pp 3-5

[Article by Capt 3d Rank V. Yakovlev: "NATO: Wagering on Military Superiority"]

[Text] In accord with the obligations stemming from the Final Act of the European Conference on Security and Cooperation, the countries of the socialist commonwealth have carried out a consistent policy of strengthening peace and good-neighbor relations with all the Western European states. Precisely such objectives are pursued by the new proposals raised at the jubilee session of the Political Consultative Committee of the Warsaw Pact states held in May 1980 in Warsaw.

However, the peace-loving initiatives of the USSR and the other socialist countries have encountered growing resistance from the opponents of detente, and primarily from the military-political leadership of the United States and NATO. Here they have widely employed the myth of the "Soviet military threat" endeavoring by it to frighten the peoples of North America and Western Europe and to assist in the approving of decisions in NATO to increase military preparations with completely obvious aims, that is, by any means to attempt to achieve military superiority over the Warsaw Pact states in order to be able to deal with the socialist countries "from a position of strength."

On this level the spring sessions of the NATO executive bodies held in May-June 1980 were no exception. Just before them, the United States, with the active support of Great Britain and the FRG, set two tasks for the NATO military leadership: to define the basic directions for a further rise in the military might of the bloc under the pretext of the events in Iran and Afghanistan and to force the Western European partners to increase their contribution to the overall military preparations in line with Washington's decision to broaden the American military presence in the Persian Gulf and Indian Ocean.

The series of meetings was opened on 12 May by a conference of the defense secretaries of the 11 member nations of the NATO Eurogroup in Brussels. According to the data of the Western press, the ministers affirmed the obligations of the Western European countries to annually increase their real military expenditures by a minimum of 3 percent and resolved to focus the efforts of the Eurogroup on increasing the combat and mobilization readiness of the armed forces and improving their technical equipping, rear services and medical support. Plans were approved for

extending the network of weapons and military equipment depots for reinforcements, the modernization and construction of airfields in the FRG, Belgium, the Netherlands, Norway, Italy and Greece as well as other measures aimed at increasing the combat capabilities of the armed forces.

On the same day in Brussels a session was held of the NATO Military Committee with the participation of the chiefs of the general staffs of the NATO armed forces, with the exception of France. It reviewed the current questions of military organizational development and the course of the operational and combat training of the troops. The chairman of the committee, the Norwegian general Gundersen, gave a report on the balance of forces between the East and West. In it, on the basis of arbitrarily selected facts, conclusions were drawn on the supposed disruption of the balance of forces in favor of the Warsaw Pact countries.

These conclusions lay at the basis of the work done by the Military Planning Committee the sessions of which were held on 13-14 May on the level of the NATO ministers of defense and foreign affairs, with the exception of France and Greece. Under the pressure of the U.S., West German and British representatives, the committee approved preliminary and long-range plans for further increasing the combat capabilities of the European NATO armed forces. Both plans envisaged the accelerated implementation of the measures outlined in 1978 by the long-range NATO military program.

The preliminary plan is designed for 12 months and envisages an increase in the stockpiles of weapons, ammunition and military equipment, an acceleration in the purchasing of chemical attack and antichemical defense equipment, the equipping of naval forces with new ship-to-ship and ship-to-air missiles and the broadening of military-economic aid to Turkey and Portugal.

The long-range plan envisages over a 3-4-year period an increase in the stockpiles of weapons and military equipment and the number of trained reservists, a better system for the mobilization deployment of the armed forces as well as the possible involvement of civil aviation aircraft of the NATO countries in ferrying troop reinforcements from the United States to Europe.

In principle the committee approved the Dutch proposal to create within NATO a new formation of the allied navies for replacing the ships of the U.S. Sixth Fleet which will be withdrawn from the Mediterranean into the Persian Gulf and Indian Ocean.

In the course of the session, the American representatives demanded that their European allies provide more decisive support for the anti-Soviet campaign initiated by the Americans as well as a more active part in providing diverse, including military, aid to the reactionary regimes and defend the interests of the West beyond the NATO "zone of responsibility." They demanded that a decisive economic and diplomatic campaign be initiated against Iran and economic sanctions applied fully against it.

The ministers of defense and foreign affairs restated that the presence of a limited number of Soviet troops in Afghanistan and the events in Iran had substantially disrupted NATO plans and position in Southwestern Asia. The necessity was recognized of carrying out more coordinated actions by the Western countries to support

the reactionary forces in this region and provide the United States with greater freedom of action outside the NATO zone. Here the possibility is not excluded of direct military support for U.S. operations in the Near and Middle East by individual European NATO countries.

On 3-4 June 1980, in Bodø (Norway) an enlarged session was held by the NATO Nuclear Planning Group with the participation of the ministers of defense from 11 countries (the United States, Great Britain, FRG, Italy, Canada, Belgium, the Netherlands, Denmark, Norway, Portugal and Turkey), the permanent representative of Greece and representatives from the higher military command of NATO.

The session was accompanied by provocative anti-Soviet statements which were required to justify to the world the decision of the special session of the NATO Council (December 1979) to deploy 108 launchers of the Pershing-2 guided missiles and 464 land-based cruise missiles (116 mobile launchers) in Western Europe in 1983-1986. The U.S. secretary of defense had high regard for the actions of the FRG which has already turned over to the United States all the necessary data on the points for the deployment of 108 Pershing-2 launchers and 96 cruise missiles on its territory. Great Britain and Italy were to provide information on the places for deploying, respectively, 160 and 112 cruise missiles within 2 months. Regardless of the pressure applied, the Belgian and Dutch governments before the session of the group had not defined their position on the problem of the deploying 48 cruise missiles on each of their respective territories.

The participants at the session again rejected the proposal of the Soviet Union to reject the decision to deploy "Eurostrategic weapons" in Europe as a preliminary condition for commencing the SALT-3 talks. Thus the NATO leadership affirmed its desire to achieve unilateral military advantages and under the pretext of a propaganda campaign about the "threat from the East," is planning to conduct talks with the USSR "from a position of strength."

In the course of the session of the NATO Council attended by the foreign ministers (25-26 June, Ankara), the above-mentioned decisions were approved and discussions were held on the present international situation, the internal political situation in NATO and the ways to strengthen the southern flank of the bloc, including the possibility of providing emergency military-economic aid to the countries of the region, primarily Turkey. Also reviewed were the state and prospects for the development of relations between the East and West and the positions of the NATO countries were coordinated on the forthcoming Madrid meeting of the representatives from the member countries of the European Conference on Security and Cooperation. The ministers heard reports on the situation in the Near and Middle East and defined the opportunities for more coordinated actions outside the zone of the bloc.

The results of the spring meetings of the NATO executive bodies have shown that the leadership of the bloc, in hiding behind the fabrications about the "Soviet threat," is continuing to increase military preparations and is obstructing the efforts of the Soviet Union and the other countries of the socialist commonwealth aimed at extending the process of detente on the European continent. At the same time attempts were being taken to geographically broaden the sphere of NATO activities and justify the possibility of the involvement of NATO armed forces in actions in the Near and Middle East. Active preparations to deploy new medium-range nuclear weapons

delivery systems in Western Europe shows the desire of NATO to begin a new round of the arms race and to turn Europe back to the times of the Cold War contrary to the desire of the European peoples for peace and mutually advantageous cooperation.

Under the present complicated international situation, the highest vigilance and political maturity of all the personnel of the USSR Armed Forces assume enormous significance. United around the CPSU and totally loyal to our people, the Soviet Armed Forces in combat cooperation with the fraternal Warsaw Pact armies must vigilantly guard peace and socialism and be constantly ready to thwart any aggressive plans of imperialism.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. METHODS OF PSYCHOLOGICAL WARFARE

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 8, Aug 80 (signed to press 7 Aug 80) pp 6-9

[Article by Col E. Bogdanov: "The Pentagon and 'Psychological Warfare'"]

[Text] The more the opportunities of American imperialism are reduced to impose its will on other countries and peoples the more rabidly the aggressive and short-sighted American leaders respond to this. Washington's policy of undermining detente, the forced increase in military preparations, the intense fanning of militaristic passions as well as the violent campaign of chauvinism and anti-Sovietism developed in the United States have been accompanied by an intensification of ideological subversion against the USSR and the other countries of the socialist commonwealth.

In describing the propaganda which is being conducted by our class opponents in peacetime, the General Secretary of the CPSU Central Committee and Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev, has emphasized that the organizers of "psychological warfare" have only one objective: "To impede the growth of the influence of socialism on the minds of people and to sow mistrust and dislike for it by any means. Hence the routine fabrications, conscienceless falsifications and direct lies about the Soviet Union designed for a poorly informed audience, for gullible readers, listeners and viewers."

The dominant role in the organizing of imperialist foreign political propaganda is played by the International Communications Agency (ICA) set up in 1978 in the place of the bankrupt Information Agency (USIA). It was entrusted with working out the basic directions of "psychological warfare" and implementing measures against the socialist countries and preparing detailed plans, including in the event of "extraordinary circumstances." The agency director became the chief adviser of the president and secretary of state on these questions. More than 20 governmental agencies are under him. The ICA has its own agencies in 126 countries of the world and employs around 9,000 people who organize and conduct subversive propaganda.

The basic mouthpiece of the ICA is the government radio station "Voice of America" which broadcasts around-the-clock in English and 37 foreign languages with a total broadcast time of 816 hours a week. More than 75 percent of the information disseminated by the American radio stations is aimed at the Soviet Union and the other

socialist countries. The agency has 12 mass-edition magazines in 22 languages and each year prepares up to 200 videotapes and around 100 films specially designed for ideological subversion abroad.

The budget of Voice of America has been raised up to 83 million dollars, and in the 1980-1981 fiscal year will reach approximately 100 million dollars.

The CIA plays an active role in the planning, preparation and carrying out of "psychological operations" mainly on a strategic scale. One of its functions is the effective manipulation of public opinion, the misleading of the population, and the distortion and perversion of the essence of the events occurring in the world or in individual countries. For this use is made both of its own extensive propaganda mechanism as well as the mass information media in the United States and abroad. The propaganda subdivisions of the CIA employ sociologists, psychologists, historians and other specialists who work out propaganda operations considering the recommendations of the White House, State Department, Defense Department, the ICA and other agencies. CIA representatives are also part of the various coordination committees for the questions of information (more accurately, misinformation).

In the words of the former CIA employee D. Godfrey, the U.S. intelligence agencies work out and realize a "complicated strategy of psychological warfare" and they "search for new ways to penetrate other societies."

The Council for International Radio Broadcasting directs the activities of the Cold War mouthpieces, Radio Liberty and Radio Free Europe which are headquartered in Munich (FRG). They constantly slander the socialist system and make an enormous effort to subvert it. The allocations for the council in the 1979-1980 fiscal year were set at around 93.9 million dollars, and 113.5 million for the 1980-1981 fiscal year.

In wartime or with a sharp exacerbation in the political situation in one or another region of the world, the Pentagon would be immediately involved in conducting the "psychological operations" being implemented by the civilian agencies. The Pentagon possesses a significant staff and technical facilities. In peacetime it provides aid to other agencies in planning, the training of personnel, the elaboration, and in a number of instances, also the execution of "psychological operations," in particular in combating the national liberation movement.

The planning, coordination and control over the implementation of "psychological operations" on the level of the armed forces are the duty of the personnel of the deputy secretary of defense for military-political questions. There is a special section in the operations agency of the Joint Chiefs of Staff (in the "special operation" section). On the staff of the U.S. Army a special section has been set up for "psychological operations." In organizational terms the "psychological operations" units and subunits are part of the ground forces.

The instructional documents for the conducting of "psychological operations" provide for the creation of "special warfare methods" sections on the staffs of the U.S. ground forces in each theater of war under combat conditions, and "special operations" departments on the staffs of armies (separate corps). They are directly responsible for the elaboration and implementation of "psychological operations"

plans, the preparation of the appropriate points for the operational documents and the assessing of the effectiveness of subversive activities.

On the staffs of divisions and army corps positions have been introduced for specialist officers in "psychological operations." Moreover, all the chiefs of the departments (sections) and groups of these staffs have been assigned specific duties in assisting in the conduct of such operations.

The realization of "psychological operations" is to be most closely coordinated with the military-political aims of the U.S. ruling circles and with the combat missions being carried out by the armed forces. Depending upon this, they, in the view of the command of the U.S. armed forces, can be strategic and tactical as well as consolidating.

The "strategic psychological operations" mean psychological subversion on a global scale. They are worked out and approved on the highest governmental level, they are planned for an extended time and can be carried out not only under a combat situation but also in the course of various military-political actions. In the interests of these operations a "showing of force" is possible including the ferrying of large contingents of ground forces, naval forces and air forces.

The "tactical psychological operations" are restricted in scale, scope and degree of effect. These are organized directly in the zone of combat operations within the region under the control of the corresponding commander. These are designed to obtain quick results and are carried out chiefly by the troop "psychological warfare" personnel.

The "consolidating psychological operations" are aimed at achieving a high level of the moral-political state of the troop personnel and the population, to offset the ideological and psychological actions by the enemy and to achieve sympathy and support from the population of the U.S. allies or neutral states and stabilize the situation in states with unstable reactionary regimes. The "psychological consolidation" measures are to be carried out in close cooperation with the bodies of counterintelligence, police, civil defense and the representatives of the mass information media.

In the estimate of foreign specialists, the U.S. armed forces have experience in conducting "psychological operations" gained during aggression in Korea and particularly in Indochina. During the period of the war in Vietnam, the fourth and seventh "psychological warfare" groups as well as the sixth, eighth and tenth group groups attached to corps operated independently as part of the American troops. Moreover "psychological warfare" subunits existed in all the "special purpose" troop groups as well as in the infantry and airborne divisions and marine divisions.

After the end of the war, the U.S. armed forces generalized and analyzed the experience of employing the "psychological warfare" units and subunits under combat conditions. As a result their composition and structure underwent definite changes.

Thus, depending upon the specific conditions, the scale and nature of the missions to be carried out, the "psychological warfare" units and subunits, according to statements in the foreign press, are divided into groups, battalions (for general

support, direct support, for working among prisoners of war and consolidating) and direct support companies. These include standard subunits in various combinations and sizes, including the platoons for audiovisual media, mobile radios, light duplicating equipment, loudspeakers and so forth. In addition, in a group and battalion there is a research and analysis platoon which is concerned with studying the effectiveness of the measures carried out.

The organizational structure of the "psychological warfare" resources provides for the presence of headquarters bodies, up to five companies in a battalion and up to eight operations platoons in a company, as well as supply and maintenance subunits.

The TOE provide for the creation of an editorial group (or propaganda group) in the "psychological warfare" units. This is a sort of "think tank" which studies various contingents of the population and opposing enemy troop formations, it prepares audiovisual programs and printed materials and also assesses the effectiveness of the measures.

The equipment of the battalions depends upon the specific missions which they must carry out. A general support battalion has heavy printing equipment and radio gear. In a direct support battalion there is an editorial group and a significant amount of audiovisual equipment. A battalion involved in work among the local population is more adapted for the use of audiovisual and stationary mass information media (radio, TV, movies and printing facilities). Printing and audiovisual media predominate in a battalion for work among prisoners of war.

The "psychological warfare" units and subunits can act independently as well as be attached to formations and field forces.

The units and subunits of the "special purpose" troops can also be used for conducting "psychological warfare." From among one group of these troops there are plans to separate out up to 54 detachments and teams which along with subversive activities can distribute leaflets and spread rumors, provoke demonstrations, organize armed counterrevolutionary and other actions.

The officers and junior officers of the "psychological warfare" subunits are carefully selected. A majority of them know foreign countries, their language, history, geography, the way of life and habits of the population. They are specialists in the area of journalism, radio, film, TV, fine arts and other propaganda and visual agitation media. They are capable of effectively drawing up subversive leaflets, publishing newspapers and pamphlets, preparing radio and sound broadcasting programs for the enemy and work among the population of the occupied areas or the combat zone. The technical personnel is trained in operating printing equipment as well as radio and sound broadcasting facilities.

For conducting "psychological warfare" operations in the United States, the following technical devices have been developed and adopted: sound broadcasting stations, printing equipment, aviation and artillery equipment for spreading printed matter, radio stations and so forth.

Thus, there is a portable sound broadcasting station which includes: an amplifier, a tape recorder and four loudspeakers (with a total power of 250 watts). Motor

vehicles, armored personnel carriers and light helicopters can carry two (500-watt) --four (1,000-watt) amplifier units, while airplanes can carry a loudspeaker system with an output power up to 1,800 watts.

During the American aggression in Vietnam, the First Infantry Division of the U.S. Ground Forces widely used, in particular, the OH-6A helicopters with sound broadcasting sets on board. They broadcast over the jungles, flying in a circle 600 m in diameter and at an altitude of 200-500 m. During the same period, using sound broadcasting units, methods were developed for relaying to the ground the programs which were radioed to the aircraft and helicopters. Such an amplification and recording system is now in use in the "psychological warfare" subunits.

The printing facilities of the "psychological warfare" units and subunits are comprised of diverse field and stationary printing equipment which can turn out mass editions of printed matter in a short period of time in various languages of the world both by using the offset method as well as with comparatively primitive copiers which are available to the staffs. For example, a stationary mimeograph makes it possible to turn out up to 2 million leaflets a day (the productivity of a mobile mimeograph is 2-fold less). A single-color offset printer carried in a motor vehicle trailer makes it possible to turn out up to 30,000 leaflets an hour. A light field "psychological warfare" printing company is capable of turning out up to 144,000 leaflets a day. In addition, there is equipment for making stereotype blocks, photographic labs, machines for folding and cutting paper, binding pamphlets and packing leaflets, as well as automatic and manual devices for rolling up the leaflets.

Various artillery devices have been developed and adopted for disseminating printed matter, including: shells for 105-mm howitzers (it carries a roll of leaflets 16.6 cm long and 7.62 cm in diameter), for 155-mm howitzers, shells for 81-mm mortars as well as unguided and guided rockets.

In the U.S. armed forces, several types of balloons made from paper, rubber or polyethylene are used to distribute printed matter. The payload of one balloon is up to 10 kg and the flight range is 400-2,400 km.

Moreover, there are remote controlled drones which can carry 250-500 kg of leaflets and other printed matter and aerial bombs which will hold around 48 kg of leaflets (30,000 copies). The leaflets can also be distributed by automatic opening air packets (5,000 in each) and air containers (50 kg) which are dropped from an altitude of up to 15,000 m. The printed matter can also be scattered manually from aircraft and helicopters.

In the plans of the "psychological warfare" specialists, an ever-larger place is being assumed by radio propaganda, and in recent years television propaganda, particularly in Europe. The mobile radio and radio-engineering equipment widely found in the "psychological warfare" subunits makes it possible to break into the enemy combat radio links and organize broadcasting on different bands.

The many years of experience in organizing and conducting "psychological warfare" as acquired during the years of the aggressions and provocations by the American military in various regions of the world, are being reinforced and developed in the

course of numerous exercises conducted by the U.S. armed forces in peacetime. The organizational structure is being continuously improved and new equipment is being developed and introduced.

In recent years, evermore attention has been given to the scientific search for new, more refined forms and methods for influencing the conscience and feelings of people. Research is being carried out on the effectiveness of "psychological operations" and a unified system has been organized for accumulating, generalizing and analyzing information materials using electronic computers for the purposes of working out and conducting ideological subversion.

All of this shows the unflagging attention given by the U.S. military-political leadership to the problems of "psychological warfare" as one of the means for achieving the aggressive objectives of American imperialism. Under such a situation the men of the Soviet Armed Forces must show even higher vigilance, political maturity and a constant readiness to rebuff any ideological provocations and subversion by our class enemies.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. DEVELOPMENTS IN OPERATIONAL RESEARCH

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 8, Aug 80 (signed to press 7 Aug 80) pp 27-33

[Article by Candidate of Military Sciences, Engr-Col D. Sokolov: "The Development of Mathematical Modeling of Combat Operations in the U.S. Army"]

[Text] The command of the U.S. Army, in the plans to increase the combat might of the ground forces, has made extensive use of the most recent achievements in scientific and technical progress, including the methods of studying combat and operations based upon the mathematical modeling of combat operations.

From statements in the foreign military press, over the last 20 years the scientific research organizations of the U.S. Defense Department and Army have worked out a large number of models for the combat employment of individual types of weapons, subunits, formations and field forces of the ground troops. These are used both for assessing the effectiveness of the combat employment of the troops as well as for the purposes of military planning (they serve as a means for studying the organizational structure of the ground forces and their component units as well as the capabilities of the weapons systems and the tactical standards).

General provisions. In accord with American terminology, all models are divided into three basic types: military games, stochastic models (or simulations) and analytical models.

A military game, in the opinion of foreign military specialists, is a man-machine model which includes the personnel of the headquarters bodies and the computational procedures or mathematical models. The games extensively use computers by which the data are generated for the expected results of the combat operations in various stages. This type of model is considered very costly and, in addition, requires great time expenditures. For example, it took 4-8 years to develop certain existing military games and in 1971, 6 months were spent in order to obtain one realization of 10 hours of combat operations on a tactical scale. The leading U.S. specialists feel that such a type of model is little suited for analyzing the combat employment of ground forces, although it can serve for training command personnel in decision-taking.

Stochastic models (sometimes called Monte Carlo models) are the computer reproduction of a large number of combat situations described using the concepts of

probability theory. As the initial data for them it is essential to have not only the absolute values in the parameters of combat operations but also their possible deviations. The probable distributions of the results are produced in the output of the models, and for obtaining these results the simulated process is reproduced (repeated) many times for each fixed set of initial data. The specialists feel that around 30 reproductions are required for the statistical stability of results in a model on the tactical level.

As the foreign press has stated, the given type of models is used for studying the combat employment of individual types of weapons and subunits up to the battalion, inclusively. Such a limitation on the scale of modeling is determined by some of their negative aspects, and above all, by the large time losses. It is considered inefficient to spend 10-20 man-years for developing a model of subunit combat. Moreover, it requires around 5 hours of computer machine time to play through one tactical situation on the battalion level, and here the time is not counted required for preparing the scenario of the engagement, the initial data and feeding them into the computer. It has also been pointed out that the large number of variable data greatly complicated an analysis of the model's sensitivity to the assumptions and initial data. U.S. specialists feel that at present the given models, regardless of their shortcomings, can be successfully used for training command personnel on the "platoon--brigade" level using special automated trainers.

Analytical models provide for the obtaining of a final result by a sequence of mathematical operations which establish quantitative relationships between the various components of combat effectiveness. In the opinion of American specialists, their use simplifies the analysis of the model's sensitivity and provides a clearer interpretation of the modeling results. However this is valid only in the instance that the employed mathematical dependences more or less accurately reflect the appropriate combat processes. The given models require significantly fewer service personnel and computer machine time for conducting the research than do the stochastic ones.

The state of modeling. According to information in the foreign press, the development of mathematical models at scientific research organizations for the U.S. ground forces started in the 1950's and by the middle of this decade only simple analytical models of combat operations had been worked out and they did not find any significant practical use. Later models appeared of so-called duel engagements and these were in the form of both stochastic and analytical models. At the same time development started on stochastic models for the combat operations of small subunits (up to the battalion, inclusively) of the CDEC (Combat Developments Experimental Center) and the initial version of "Carmonette."¹ Both were designed at that time for extending the opportunities for conducting exercises using maps and in the field.

In 1962-1967, work was intensified on improving the stochastic operations models on the battalion level and considering an ever-larger number of parameters which influence the course of combat. The most widely found were the modified version of

¹Here and below in the text such models are named after the authors, the names of mathematical terms and so forth.--Editors.

"Carmonette," the DYN-TACS (Dynamic Tactical Simulator) model and others as well as the relatively simple analytical model of the operations of ground forces and the air force considering logistical support, ATLAS (A Tactical, Logistical and Air Simulation) using fire-power indexes² of the types of weapons. At the same time, development was started on military game models using electronic computers for training command personnel of brigade and division staffs in conducting combat operations of the divisions as well as corps and army operations: DIVTAG-1 (Division Tactical Game), "Advice," "Legion," "Tartarus," TACSPIEL and THEATERSPIEL.

In 1968-1973, there was an improvement in the already existing stochastic models of subunit combat operations. During this period there was the first actual testing of the conjugate analytical-stochastic models on the battalion level, and in particular "Bonder." Work was continued on military games in the conducting of combat operations by a division: DIVTAG-2, DIVWAG (Division War Game), DBM (Division Battle Model) and others as well as on the models of large-scale operations of the ground forces and air force, for example, ATLAS, GACAM (Ground-Air Campaign Model) and TBM (Theater Battle Model). In comparison with the previous 5 years, the pace of work declined somewhat in the area of duel engagements.

By the middle of the 1970's, a large number of ground forces combat models was introduced into practice, and a significant portion of them was made up of subunit models (basically the battalion). The reason for this was the opinion which existed at that time among the U.S. army command that the battalion level is the most acceptable from the viewpoint of detailing the combat processes and also considering the structure of the troops. However, even then a number of American researchers felt that it was essential to have analysis of the combat capabilities on the division and corps level as well as research on the structure of the ground forces. For this more detailed models of operations in a theater of war were required.

At this same time, work was undertaken to check out (verify) the mathematical models using the data obtained as a result of the wars in Korea, Vietnam and the Near East as well as range and field testing. Certain leading American specialists in the modeling area asserted that there virtually did not exist any experimentally tested models of combat operations. The notion was voiced that in the near future it would be difficult to expect verification of the existing models, as the researchers did not possess sufficient historical or experimental data for the check. Although the work of the Center for the Testing of New Types of Weapons and Military Equipment of the Command for Research and Development and Logistics of the U.S. Ground Forces was aimed at the verification of certain battalion-level models such as the IDA (Institute of Defense Analyses), "Carmonette" and DYN-TACS, the data worked out by the center were not based on combat experience. It was also felt that the models which have not undergone verification should not be used for a precise assessment of the effectiveness of combat operations. They should be employed for analytical purposes, that is, for determining the basic trends in the development of the ground forces, for ascertaining the possible range of solutions for certain problems, providing data for planning and so forth.

²The fire-power indexes are sometimes termed the combat potentials of weapons. See ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 12, 1979, pp 15-18.--Editors.

The degree of the elaboration of various operations models and their verification in the middle of the 1970's is shown in Tables 1-3. In them the following key has been used: M--the model has been worked out and actually exists; M₁--the model is in the stage of improvement; T--the model has been tested with positive results; T₁--testing provided a negative result; T₂--testing disclosed partial positive results; T₃--testing of model not complete; V--model completely verified; V₁--verification produced negative results; V₂--model partially verified; A--assumptions and constraints of model accepted; A₁--assumptions and constraints of model unacceptable; A₂--assumptions and constraints partially acceptable.

Table 1

Models for the Combat Employment of Individual Types of Weapons

Types of Weapons	Characteristics of Combat Processes					Characteristics of Control Processes	
	1	2	3	4	5	6	7
Firearms	M TV ₂	M TV	M TV	M T ₃ V	M T ₂	M T ₁ A ₁	M T ₁ A ₁
Tanks and antitank weapons: against personnel	M TV ₂	M TV	M TV ₂	M T ₃ A ₂	M T ₁	M T ₁ A ₁	M T ₁ A ₁
against military equipment	M TV ₂	M TV	M TV ₂	M T ₃ A ₂	M T ₂ V ₂	M T ₁ A ₁	M T ₁ A ₁
Artillery: against personnel	M T ₁ A	M T ₁	M TV	M T ₃ V	M T ₂ , ₃	M T ₁ A ₁	M T ₁ A ₁
against military equipment	M T ₁ A	M T ₁	M TV	M T ₃ V	M T ₂ A ₁	M T ₁ A ₁	M T ₁ A ₁
Antiaircraft artillery	M T ₁ A	M T ₁	M TV	M TV ₂	M T ₂ , ₃ A	M T ₁ A ₁	M T ₁ A ₁
Helicopters (operations against ground targets)	M TV	M T ₂	M TV	M TA ₂	M A ₂	M T ₁ A ₁	M T ₁ A ₁

Key: 1--Maneuverability; 2--Target detection; 3--Firing; 4--Accuracy of firing; 5--Destructive effect; 6--Choice of target; 7--Determining moment for opening fire.

In analyzing the state of mathematical models, the U.S. military specialists have felt it obligatory to consider the following indicators in the ground forces combat models: The characteristics of the weapons such as rate of fire, accuracy of fire, disruptive effect, possibilities of detecting targets and so forth; the organizational structure of the troops such as the number of personnel and weapons in the subunits, units and formations; the tactical provisions which determine the taking of decisions which are changed depending upon the choice of the types of combat such as offensive, meeting engagement, retreat and so forth, prior to the

Table 2

Models of Subunit Combat Operations

Types of Subunits and Nature of Combat Operations	Combat Processes					Control Processes				10
	1	2	3	4	5	6	7	8	9	
Uniform Forces										
Infantry against infantry: Dismounted (platoons)	A ₁	M A	M T ₃ A	M T ₁ A ₂	-	M ₁ T ₁	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₁	MT V ₁ A ₂
On armored personnel carriers (companies)	A ₁	M A	M T ₃ A	M T ₁ A ₂	M	M T ₁	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₁	MT V ₁ A ₂
Tanks against tanks (platoon, company, battalion)	A ₁	M A ₂	M T ₃ A ₂	M T ₁ A ₁	M	M ₁ T	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₁	MT V ₁ A
Field artillery against artillery (battery, battalion)	A ₁	A ₁	M T ₁	M T ₁ A ₂	A ₁	-	A ₁	M T ₁ A ₁	M T ₁ A ₁	A ₁
Helicopters against ground subunits (company, battalion)	A ₁	M TA ₂	M T _{2, 3} A	M T ₁ A ₂	A ₁	-	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₂
Antiaircraft artillery against aviation (battery, battalion)	A ₁	M A ₂	M T ₂ A	M T ₁ A ₂	A ₁	-	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₂
Heterogeneous Forces										
Offensive against prepared defenses	M T ₁ A ₂	M T ₁ A ₂	M TA ₂	M T ₁ A ₂	M	M T ₁	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₂
Holding operations and disengagement	M T ₁ A ₂	M T ₁	M	M T ₁	M	M T ₁	M T ₁ A ₁	M T ₁ A ₁	M T ₁ A ₁	MT V ₁ A ₂

Key: 1--Organization; 2--Maneuvering; 3--Target detection; 4--Fire fight;
 5--Control and communications; 6--Choice of sector of offensive;
 7--Target allocations; 8--Choice of moment for opening fire;
 9--Choice of moment for ceasing fire; 10--Characteristics of terrain
 and conditions in the theater of war.

Table 3

Large-Scale Combat Models

Types of Combat	Combat Processes and Their Support							Control Processes		
	1	2	3	4	5	6	7	8	9	10

Combat Operations on the "Division--Corps" Level

Offensive and defensive	$\begin{matrix} M \\ T_{2,1}A_2 \end{matrix}$	M_1	$\begin{matrix} M_1 \\ T_1A_2 \end{matrix}$	$\begin{matrix} M_1 \\ T_1A_2 \end{matrix}$	$\begin{matrix} M \\ T_2A_1 \end{matrix}$	$\begin{matrix} M \\ T_1A_1 \end{matrix}$	$\begin{matrix} M \\ T_2A_1 \end{matrix}$	$\begin{matrix} M \\ T_1A_1 \end{matrix}$	M	$\begin{matrix} M \\ V_1A_1 \end{matrix}$
Holding operations	M_1	-	-	-	M	-	M_1	M	-	-
Breakthrough	M	M_1	M_1	-	M	M	M_1	M	M	M
Exploitation of success	-	-	-	-	M_1	-	M_1	-	-	-

Troop Operations in Theater of War

Solid front	$\begin{matrix} M \\ T_{2,1}A_2 \end{matrix}$	M_1	$\begin{matrix} M_1 \\ T_1A_2 \end{matrix}$	$\begin{matrix} M_1 \\ T_1A_2 \end{matrix}$	$\begin{matrix} M \\ T_2A_1 \end{matrix}$	$\begin{matrix} M \\ T_1A_1 \end{matrix}$	$\begin{matrix} M \\ T_2A_1 \end{matrix}$	$\begin{matrix} M \\ T_1A_1 \end{matrix}$	M	-
-------------	---	-------	---	---	---	---	---	---	-----	---

Key: 1--Mobility; 2--Collection of data; 3--Reconnaissance; 4--Communications; 5--Fire power; 6--Reinforcement and support; 7--Troop movement; 8--Allocation of resources; 9--Commitment of reserves; 10--Selection of breakthrough sector.

distribution of fire between the targets, the selection of the sector and momentum of the offensive, the decisions for the beginning and end of combat and so forth; the terrain conditions such as the cross-country capability of the military equipment, the influence of weather conditions on the line of sight range in reconnoitering the targets, and so forth.

From Table 1 it can be seen that all the models for the combat employment of individual types of weapons have been subjected to testing, and their basic component (the combat processes) to a significant degree has been verified. Characteristically the control processes (the selection of a target and determining the moment for opening fire) have not been verified while their testing has produced negative results, since they, in the opinion of American specialists, were based on unrealistic assumptions and hypotheses. Moreover, the absence of modeling for other parameters of the control process (moving up, the taking up of firing positions, the locating of targets, the avoiding of hits and the decision to cease fire) to a significant degree reduces the effectiveness of forecasting ground forces operations.

For the subunit operations models (Table 2) which provide for active combat operations by both sides, it is characteristic that a majority of them do not consider the organization of the subunits. Where this has been considered, testing has

produced negative results and an analysis of the assumptions has shown their partial falseness. American specialists relate this basically to the attempts to describe organization using the weapons fire power indexes which, as research has shown, were unacceptable for this purpose.

According to information in the American military press, up to the present there have been difficulties in modeling tactical reconnaissance, the choice of the sector of the strike, the region of combat operations and the type of combat and in the solving of tactical problems. A few existing models for decision taking have either not been tested out or provided negative results. In line with this opinions have been voiced on the invalidity of the assumptions lying at the basis of these models.

The models for subunit combat operations consider rather fully and in detail the characteristics of the terrain and vegetation. However, as a result of a series of tests, in particular under the program for evaluating the effectiveness of antitank guided missiles, TETAM (Tactical Effectiveness Testing of Antitank Missiles), it was established that their individual moduli, for example, the modulus for calculating the line of sight of the targets produce substantial mistakes. The data of Table 2 indicate that all these models have undergone testing and this, in contrast to the models for individual types of weapons, in a majority of instances provided negative results. The individual instances of model verification were also negative.

Among the large-scale operations models (Table 3) the most fully elaborated and tested are the models of offensive and defense. An example would be the model of a strategic operation in a theater of war, TAGS-5, developed in 1971-1973. This is a very generalized model of the combat operations of the ground forces and air force in a theater of war. The ground forces are represented in the form of homogeneous divisions while the air forces consist of three separate types of aircraft. The actions of the ground forces are modeled in a very simplified manner, and their losses are based upon the statistical data from World War II and the Korean War. The movement of the front line is determined by the terrain, by the intensity of direct air support and the balance of forces for the ground troops. The latter is based on the fire power index tables. Certain characteristics of the combat processes and control have been formalized in the subunit (company--battalion) models such as "Vector-O", the models of units and formations such as IDAGAM (Institute of Defense Analyses Ground-Air Model), DIVOPS (Division Operation Simulation), DIVWAG and others. American specialists in the modeling area have voiced doubts over the validity of the existing large-scale models. They feel that there has been a tendency to work out more and more mathematically advanced models although they can be based on an incorrect formalization of the combat process.

Serious difficulties have arisen in modeling the combat operations of troops in a theater of war when a solid front is lacking, for in this instance the position of the line of combat contact does not determine the nature of the operations of the subunits and units.

The Western press has pointed out that decision taking in the course of combat and operations has been very insufficiently modeled. A majority of the models is based upon combat scenarios and at present this is considered a major shortcoming. Virtually all the large-scale models of the middle of the 1970's used the "depletion"

(loss) concept based upon the scales of the weapons fire power indexes and the related shifting of the front line. In the opinion of modern researchers, the given concept is extremely debatable, as it is based upon expert evaluations and data from World War II and using these it is virtually impossible to determine the real degree of troop casualties under modern conditions of conducting combat operations.

American specialists feel that at present the shortcomings of using the fire power indexes of the types of weapons and the combat potentials of the troop groupings based on them are perfectly obvious. They explain their use only by the absence at this time of other models for analyzing combat capabilities on the level of the division, corps and troops in a theater of war. At present, when models not using fire power indexes have already appeared, the idea has been voiced that in the near future these indexes will be viewed as a completely obsolete "theory" of war.

In analyzing the state of modeling ground forces operations, American specialists have reached the opinion that classic combat is studied and modeled using conventional weapons while insignificant attention has been given to other types of combat activities and to the processes of control and decision taking. For an analysis of modern warfare as a whole it is not enough to have models for the combat operations of subunits and units. There must also be models on the level of the division, corps and above which simulate real combat processes.

Development prospects. As the foreign press has stated, at present American specialists are improving the existing models for the combat employment of individual types of weapons, subunits, units, formations and field forces as well as developing new ones. Research in these areas is being carried out considering the experience acquired and using parameters characteristic for combat operations under present-day conditions.

In recent years, mixed analytical-stochastic models of battalion operations have begun to be widespread ("Bonder," COMAN, IHA [Institute of Historical Analyses] and others). In them the processes of combat, target detection and sometimes the distribution of efforts are expressed by analytical dependences and the movement of the troops is described in a stochastic form. At the same time, as has been emphasized in the press, at present purely analytical models are being worked out and these require fewer expenditures of time and effort for studying combat operations. Examples could be the analytical independent model BLDM (Battalion Level Differential Model) and the so-called model with adjusted parameters "Coman" and "Lormus." Both, in the opinion of foreign specialists, describe the same processes as a stochastic model but produce the data more directly.

Extensive work is being done to further improve the modeling of the combat operations of the formations and field forces of the U.S. ground troops.

Practice has shown that the existing models of the higher tactical and strategic levels are insensitive to the parameters essential for analysis. For this reason the first series of analytical-stochastic models for division combat operations appeared. An example is the DIVOPS model in which the range of the line of sight on the terrain, the fire effect, the movement of the troops and the detecting of fire support resources are modeled analytically. The next generation of models is already being worked out on the corps level. New models are being realized in the

course of modifying military games. Thus, in the DBM military game for organizing and conducting division combat operations, a "Comanex" analytical model with adjusted parameters is used in conjunction with the "Carmonette" stochastic model.

The question is also being settled of creating less generalized and more dependable models for troop combat operations in a theater of war. Practice has shown the incorrectness of using the weapons fire power indexes for this purpose. It is assumed that a reduction in the level of generalization can be achieved by working out mixed analytical-stochastic models which make it possible to detail the operations of the subunits and play through individual episodes in a stochastic model with subsequent generalization using the analytical model. There will also be the development of models of operations in which the results of the combat operations of brigades and divisions for a certain set of combat situations and terrain conditions are calculated ahead of time and reduced to formalized tables. There will be the detailing of models on the level of a theater of war and based upon weapons fire power scales for the purpose of eliminating the generalization of the combat employment indicators and for a more realistic calculation of the troop casualties and movement on the level of the divisions and brigades.

As a whole, as the U.S. Army specialists assume, the most significant models on the "battalion--division" level worked out recently by a number of scientific research organizations are, for example, "Vector," DIVOPS, "Athema" (initially CEM or Concepts Evaluation Model), IDAGAM and the simulation version of DIVWAG. Significant attention is also being given to modeling the breakthrough of defenses, to conducting reconnaissance on an operational scale, to taking decisions in a combat situation and so forth.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: METHODS OF AIRFIELD STRIKES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 8, Aug 80 (signed to press 7 Aug 80) pp 43-49

[Article by Candidate of Military Sciences, Docent, Lt Gen Avn (Res) G. Kontsevoy: "Air Operations Against Airfields"]

[Text] The leading circles of the member nations of the aggressive NATO bloc, in continuing to increase the might of their air forces, are paying particular attention to increasing their capability to hit various objectives of the probable enemy including its airfields.

In accord with the official documents of the NATO commands, one of the primary missions of tactical aviation is to win air supremacy. This is achieved by destroying enemy aircraft on the ground and in the air, knocking out the airfields, suppressing the ground air defenses, the systems and bodies for controlling aviation operations and so forth. In the course of the recent local wars the command of the U.S. and Israeli air forces have considered strikes against enemy airfields to be one of the basic methods for carrying out this mission.

The combat experience of American aviation during the U.S. aggression in Vietnam, as the foreign military experts point out, has shown that ordinarily with a raid against an airfield the aircraft formation consisted of one strike group and several support groups. Here the former included up to two-thirds of the aircraft assigned to carry out the mission. The target, if possible, was reached covertly, at a low altitude using the terrain for concealment.

The route of flight was organized in such a manner that, in addition to employing the onboard navigation equipment, it would be possible to also use characteristic linear markers (rivers, highways, railroads and so forth).

In a significant part of these raids, the strike group, as a rule, flew in a "column of flights" formation while the flights were in a "wedge of aircraft." Ahead of it (by 2-3 minutes) was the support group, the mission of which included sealing off the airfield, while the cover flights followed to the rear and side of the final flight of the attack aircraft at a distance of 3.5-9 km. Before reaching the aircraft firing zone, the airplanes in the attack group broke up into flights and headed for the area of the airfield. At a distance of 5-6 km from the target, the crews in turn put on the afterburner and in this manner the flights were

reformed into a column of aircraft each of which, at the line of commencing the combat maneuver, executed a hump and then attacked the object assigned to it from a dive.

For attacking the runway, the airfield installations and for destroying aircraft in shelters, mainly high-explosive bombs were used with a caliber of 250-1,000 pounds with instantaneous and delayed-action fuses. In bombing runways, the pass was usually made along its axis or at an angle of 25-30° to it (Fig. 1). Most often the strike was made from a single run with the subsequent pulling away from the target at a high subsonic speed.

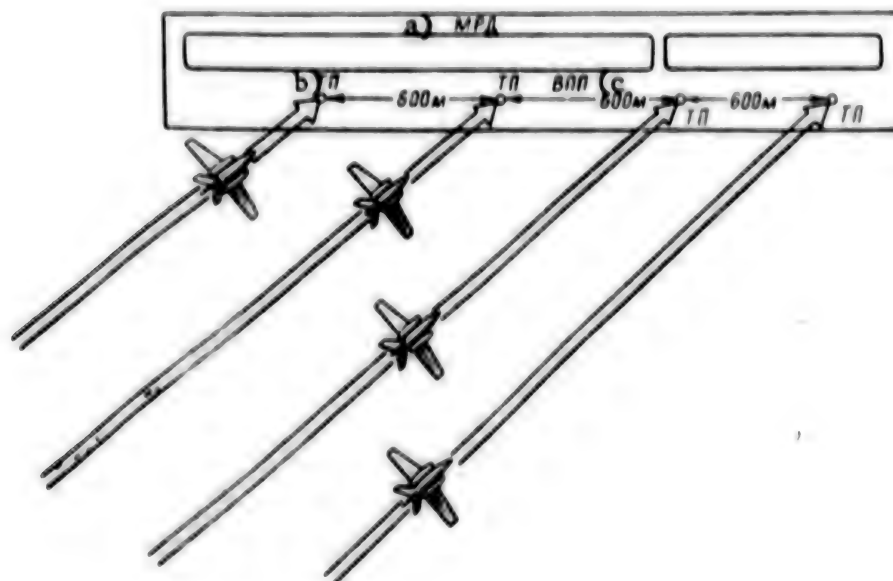


Fig. 1. Diagram of attacking a runway with a pass at a certain angle to its axis.

Key: a--Main taxiway; b--Point of impact; c--Runway.

As has been pointed out in the foreign press, in the aggressive war started by American imperialism in Southeast Asia, in raids against airfields, different variations of tactical aviation operations were employed. The choice of the depended upon many factors, including upon the size of the target, the weapons used and the air defense counteractions.

Thus, in studying the experience of U.S. air operations in Vietnam, foreign military experts have concluded that for putting out of commission a runway 2,500 m long (in order to prevent the taking off of enemy aircraft which have a take-off run of 800-900 m) it is essential to select at least four aiming points spaced evenly along the entire length of the runway. The strike must be executed in such a manner that at each of them the runway is hit with at least two or three large high-explosive bombs. Proceeding from this a large detachment of aircraft was required. They have felt that for the conditions of the Vietnamese war, where the American aviation had great numerical superiority, this was possible, however for

other theaters of war with a balanced ratio of forces, it would be very difficult to carry out such a mission, and if one considers the sharp increase in the effectiveness of the ground air defense weapons, even impossible.

Such a view was partially confirmed in the Near Eastern wars. The Israeli extremists, in struggling to win air supremacy, endeavored to knock out the Arab airfields and the aircraft on them, and for increasing the effectiveness of the strikes they used tactical procedures (they used low flight altitudes, distracting maneuvers by feint groups and so forth). However, as was pointed out in the foreign press, the strong resistance from the air defense resources of the opposing side led to a situation where the bombing accuracy of the Israeli fighter bombers was low and losses were significant. On the basis of studying the experience of the conducted wars and the combat training of their air force as well as the state and prospects of aviation development generally, the military specialists of the United States and other countries of the aggressive NATO bloc have concluded that under present-day conditions the importance of strikes against airfields has significantly risen. Here they proceed from the view that the combat readiness of the aviation largely depends upon the availability of airfields with a strong artificial surface, since modern combat aircraft have a high specific pressure on the runway. The times for rebuilding them after the strikes have also assumed important significance.

The Western press has emphasized that the existing limited opportunity for basing aviation on dirt airfields does not provide for the constant maintaining of its combat readiness, since the carrying out of flights from them depends significantly upon the weather. For example, during the spring and autumn muddy season as well as during other periods of the year when rains fall, the bearing capacity of dirt airfields declines sharply and often to such a degree that it is impossible to make flights from them. During the summer, dry season the great dustiness of the air greatly impedes taking off and increases the intervals between the taking-off aircraft, it gives away the presence of the airfields and also complicates the operation of aviation equipment and reduces its reliability.

Considering the dependence of air force combat readiness upon airfield support, the NATO military leadership has carried out a number of measures aimed at increasing the combat capabilities of their tactical aviation in operations against enemy airfields. The basic one is the creation of more efficient weapons and an improvement in the tactics for their use.

Airfields are areal targets. The most important elements of them are: runways, main taxiways, fuel, lubricant and bomb dumps, the air traffic control equipment and the aircraft in open parking areas and in shelters. Various types of ammunition can be used against them, including nuclear, concrete-piercing as well as armor-piercing, high-explosive, general-purpose, incendiary, fuel- or explosive and other. Below are given brief information published in the foreign press on some of the most modern concrete-piercing and other ammunition developed specially for strikes against airfields.

Concrete-piercing bombs. The air forces of the capitalist countries have several types of such bombs. The most modern of them are the Durandal and BAT-100.

The Durandal was developed by the French firms Engis Matra and Thomson-Brandt. It weighs 195 kg, and the warhead around 100 kg. The length of the casing is 2,700 mm, the diameter is 223 mm, and the width of the cross-shaped stabilizer is 430 mm, and the mounting frame 356 mm. As has been stated in the foreign press, the bomb is capable of piercing a concrete surface up to 700 mm thick.

The principle of action of the Durandal is shown in a typical diagram for its use (Fig. 2). The carrier aircraft approaches the airfield (runway) at an altitude of 50-80 m (speed 180-280 m per second). At a distance of 300 m from the aiming point, the bomb is released and immediately the first (brake) parachute opens followed by a second one (the main parachute) at a height of 40 m. The main chute separates from the bomb when it reaches a diving angle of 40° . Then at an altitude of about 25 m, with a drop rate of 20 m per second, a powder booster is fired and this within 0.4 second increases the impact speed of the bomb with the target to 260 m per second (an impact angle of $30-40^\circ$). The bomb pierces the runway, penetrates under the concrete surface and explodes. By this time the carrier aircraft is around 600 m away from the place of explosion.

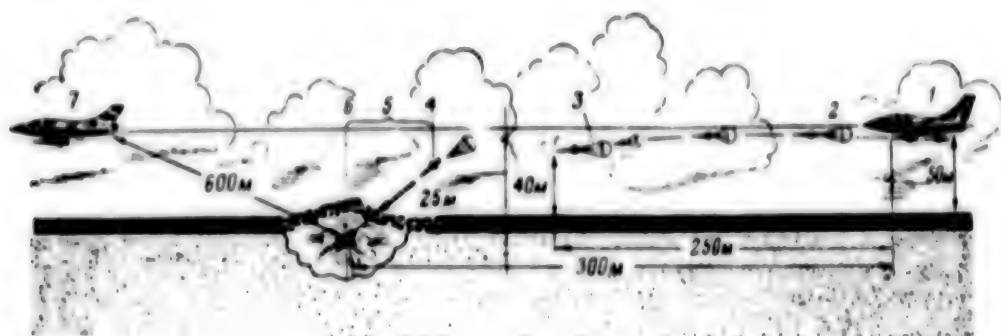


Fig. 2. Standard diagram for the use of the Durandal concrete-piercing bomb:

1--Dropping of bomb; 2--Opening of brake parachute; 3--Opening of main parachute; 4--Separation of main parachute and activating of powder booster; 5--Acceleration phase and penetration of bomb under runway surface; 6--Explosion of bomb; 7--Location of aircraft at time of bomb's explosion.

During one of the testings conducted in June 1976, a Durandal bomb was dropped from a Mirage-3 fighter on a specially built section of a runway. As a result it pierced the concrete surface 40 cm thick and formed a crater 5 m in diameter and 2 m deep. The crater was surrounded by large concrete fragments which were scattered over an area of around 250 m^2 .

French specialists assume that for dependably knocking out a runway 2,500-3,000 m long it would require four-six hits with Durandal bombs (along the runway axis) with a spacing of 500-600 m.

The BAF-100 was developed by the French Hochkiss-Brandt firm. It is basically designed for destroying airfield runways. The length of the bomb housing is 1,800 mm, the diameter is 100 mm and the weight 35 kg (warhead 20 kg). The speed of the carrier in bombing is 650-1,000 km per hour and the optimum drop height is 80 m.

The bombs are suspended on holders using two adapters. In the first instance it is possible to suspend six bombs on one holder (three clusters of two bombs each), and in the second, eight (four of two each). According to the data in the French magazine AIRE ET COSMOS, a Jaguar tactical fighter is capable of carrying up to 32 such bombs. The standard schemes for employing the BAT-100 and Durandal are analogous.

Aside from its basic purpose, the BAT-100 bomb can also be used for attacking motor vehicle columns, troop trains, dumps with fuels, lubricants and ammunition, the positions of antiaircraft guided missiles and antiaircraft artillery and other targets. In this instance, instead of the jet booster engine it is equipped with an additional explosive charge.

As was pointed out in the foreign press, the results of flight testing conducted with the bomb in France showed high effectiveness of the BAT-100 in attacking the runway, particularly in dropping them in series (Fig. 3) [not reproduced].

According to information in the foreign press, analogous bombs are in use or are being developed in many other countries. For example, Spain has developed a so-called active jet bomb specially designed for knocking out runways. The length of its housing is 3,200 mm, the diameter is 300 mm, the span of the tail assembly is 600 mm, the overall weight is 330 kg and the bomb charge 75 kg. It, like the above-mentioned models, is also equipped with a brake parachute and a solid-fuel booster and can pierce a reinforced concrete surface up to 600 mm thick (the destruction area reaches 180 m²).

Guided bombs. American military experts consider the most effective weapon against airfields to be the GBU-15 guided bomb which can be equipped with the following modular warheads: concrete piercing, FAE and cluster. The bomb weighs 1,110-1,185 kg, the overall length is 3,900 mm and the diameter of the housing 457 mm.

The concrete-piercing warhead (a caliber of 2,000 pounds) has two charges: a head shaped charge (weighing 5 kg) which cuts a deep opening in the concrete, and a high explosive charge (200 kg) which penetrates beneath the surface and explodes with a short delay.

The FAE warhead or HSF-2 (a caliber of 2,000 pounds) is designed to destroy aircraft on open parking areas, radar stations and other objects located on open terrain. According to the data of the foreign press, the fuel-air explosives possess a greater destructive force than conventional ones (with an equal weight of explosive). For example, the effectiveness of the exploding of a charge of ethylene oxide surpasses an explosion of TNT in terms of the overpressure in the front of the explosive wave by 2.7-5-fold.

The cluster warhead can be used for damaging aircraft and other aviation equipment located in covered group parking areas, for mining the territory of an airfield and for carrying out other missions. Here a high effectiveness of the strike can be achieved by selecting an optimum combination of the types and the number of ammunition in loading the bomb warheads.

Bomb clusters. In recent years abroad great attention has been given to the development of cluster-type aviation weapons for attacking areal targets, including airfields. Thus, West Germany has developed an aerial bomb cluster the MW-1. It consists of four containers connected into a single unit. It has 224 tubular guides which can be loaded with different types of ammunition (concrete-piercing, armor-piercing, high explosive, incendiary and other bombs as well as fragmentation mines). They are fired by burster charges in both directions (perpendicular to the longitudinal axis of the carrier aircraft). The drop is controlled by an onboard computer. The length of the cluster is 550 cm, the width is 150 cm and the height 70 cm. In loading it with concrete-piercing elements (the weight of each is 10 kg, the diameter of destruction to the runway surface is around 4 m), the weight of the cluster is 4,600 kg. The damaged area can reach 180 x 500 m. The cluster is suspended under the aircraft fuselage and after the expending of the ammunition can be dropped in flight.

According to data published in the Western press, they plan to use the MW-1 cluster in low altitude flights (around 50 m) and at low subsonic speeds. Here the maximum destroyed area can equal 500 x 2,500 m. The cluster is to be used on the F-4G Phantom and Tornado tactical fighters.

The American Lockheed firm is developing a similar bomb cluster under a program of the U.S. Air Forces called CADM (Clustered Airfield Defeat Submunitions). This is designed for hitting runways, taxiways with a concrete surface, airplanes and other military equipment. Great Britain is developing the JP-233 bomb cluster, and France is testing the Beluga bomb cluster. They also are to be used for attacking airfields.

Along with the above-described special bombs and clusters, in attacking airfields, conventional ("regulation") bombs can also be used (such as high explosive, incendiary, fragmentation and other).*

The improving of tactics. In studying the experience of operations in local wars as well as the results of testing weapons systems and daily combat training for the aviation units and subunits, the military leadership of the NATO countries is giving great attention to developing air force tactics in the fight for winning air supremacy by attacking enemy airfields. The checking out of the new methods of air operations is being done during various exercises which are usually conducted under conditions as close as possible to those which actually exist in the specific theaters of war.

During these exercises, the commands of the air units and subunits develop optimum variations for: selecting the weapons; determining the composition of the strike groups and support forces; the routes and profiles of the flights; the organizing of cooperation with the other branches of aviation and ground forces; the penetrating of air defenses; the attacking of the target and the carrying out of the mission.

*For more detail on aerial bombs see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 8, 1979, pp 53-56.--Editors.

Practice flights in these exercises, as a rule, are carried out with the making of hypothetical strikes against the "enemy" airfields or against actual airfield mock-ups at ranges. For example, during the exercises conducted in the summer of 1978 for the joint NATO air forces in the Central European theater of war under the code name "Tactical Weapons Meet," one of the strike groups consisting of 16 aircraft from the West German and British air forces (four F-104, eight F-4 and four Jaguars) made a feigned strike against the Laarbruch Air Base for the purpose of "putting it out of operation for a period of at least 3 hours."

In considering the air reconnaissance data on the accumulation of "enemy" aircraft at the air base, and a larger portion of them was in open parking areas, the group commander decided to make a "strike" in a "column of flights" formation (four aircraft in each) with a distance of around 5 km between the flights. Here the F-104 fighter bombers (an assumed combat load of two bomb clusters per aircraft) first made a "strike" against the "enemy" aircraft at the parking areas. Behind them a flight of F-4 aircraft (nine bombs on each) attacked the aircraft which were in semicovered protective structures as well as any others in order to prevent their taking off. The missions of the remaining four tactical F-4 fighters (also with nine bombs on each) was to increase the efforts of the first two flights. And, finally, the flight of Jaguar fighter bombers (each carrying four 1,000-pound bombs with differing delay times from 30 minutes to 5 hours) was to "mine" the air base in order to prevent the "enemy" from carrying out the work to eliminate the consequences of the "strike."

As was announced in the foreign press, two full-scale airfield models simulating the airfields located on GDR territory have been built at the range facilities of the Nellis Air Base in Nevada for training the tactical air crews of the U.S. Air Force in making strikes against enemy airfields. At this installation exercises are conducted under the "Red Flag" Program. Participating in them are crews from the air forces of the United States and certain of its NATO allies. All these exercises are carried out, as a rule, under a complicated tactical situation. This reemphasizes that the imperialist circles in their aggressive plans aimed against the USSR and the other socialist countries are actively preparing to win air supremacy by destroying the aircraft on the ground and by knocking out the airfields.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: AIRCRAFT LANDING SYSTEMS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 8, Aug 80 (signed to press 7 Aug 80) pp 49-53

[Article by Engr-Col S. Borisov: "Radio Aircraft Landing Systems"]

[Text] The effectiveness of employing combat aviation, according to the statements of foreign military specialists, to a significant degree depends upon its ability to carry out missions during the day and at night under difficult weather conditions. This, in turn, is related to airfield equipment and to the possibilities of the flight crews to land and take off under such conditions.

The statements in the foreign press evidence constant attention by the air force commands in the capitalist countries to improve the radio landing systems in use and develop new ones. However, the evolution and introduction of new landing equipment has occurred more slowly than, for example, the airborne detection, reconnaissance and aiming equipment or radio communications equipment. Foreign specialists explain this by the fact that landing equipment is in essence standard for all types and purposes of aircraft and the replacing of this represents a complicated process entailing a number of economic factors.

For this reason many airfields in the United States, Great Britain, France and the FRG still operate the equipment of landing systems developed 15 and more years ago. As for the airfields located on the territories of developing countries, basically only obsolete equipment has been installed at them.

All of the employed radio landing support systems can be divided into course-and-glide and radar.

Permanent airfields and civil airports are equipped with the former. Their equipment, according to information in the foreign press, also exists on a majority of the aircraft of the strategic, tactical and military transport aviation. As the foreign military specialists feel, because of this opportunities are increased for military aviation to use civilian airports.

The radar landing systems have been widely developed in military aviation, as they are more mobile, simpler to operate and do not require the installing of special equipment on the aircraft. Their automated versions are employed on carrier-based aviation.

Course-and-glide landing systems are a combination of ground beacons located at the airfield and onboard receiving equipment with indicators. The directional patterns created by the radio beacon antennas make it possible for the pilot to maintain the correct course in the process of the landing approach and not violate the essential law of altering the position of the aircraft in terms of altitude. However, in the opinion of foreign specialists, the existing course-and-glide systems of the ILS (Instrument Landing System) type developed more than 20 years ago at present do not fully meet the demands of landing modern aircraft. The ultra-short wave frequency band used in them does not create steady radio signal zones at altitudes under 30 m and this excludes an automatic landing. The quality of the operation of an ILS system is greatly influenced by the type and moisture content of the ground surface, the presence of a snow cover, structures, trees and so forth. The system does not provide an opportunity to choose optimum glide angles for the given type of aircraft (it provides for a landing approach only at angles of 2-3°).

Because of these reasons, as has been repeatedly pointed out in the foreign press, the capitalist countries are working to improve the landing facilities. The basic direction is developing a system with scanning antenna beams and utilizing the centimeter wave band. Experimental models of this system known as TRSB/MLS (Time Reference Scanning Beam/Microwave Landing System), that is, a centimeter-band landing system with synchronously scanning beams, have been developed in the United States. In 1978, this was accepted by the International Civil Aviation Organization (ICAO) as the only promising one. The system provides rather accurate measuring by the aircraft equipment of angles in the horizontal (course) and vertical (glide) planes, and for this reason the profile of the landing approach can be chosen depending upon the type of aircraft. A reduction in the size of the equipment is also considered a substantial advantage.

The principle of operation of the TRSB/MLS consists in the following. The localizer beacon sends out coded signals and forms two beams which scan toward one another within the limits of the angles of $\pm 40^\circ$. With the location of the aircraft at an angle of θ_s , its equipment receives a signal of the first and then the second beam (Fig. 1). The time between the receiving of the signals is proportional to the amount of the aircraft's deviation to the left of the runway axis, and when the aircraft is lined up with the runway axis the signals of the first and second beams merge. With a deviation of the aircraft to the right of the runway axis initially the signal will be received from the second beam and then from the first.

In addition to indicating the course and glide angles to the pilot, the MLS system measures the distance to a known point on the airfield, the position of the localizer beacon. This increases the accuracy and reliability of the landing. The glide-path and localizer beacons operate on the same frequency in a range of 5,000 megahertz in a signal time separation mode. Proceeding from the broad diversity of conditions for use at airfields of military and civilian aviation, the ground facilities of the MLS system are to be manufactured in three modifications: standard, improved and simplified. The standard variation should provide landings under conditions of horizontal visibility of at least 400 m and a cloud level of 30 m, the improved version should ensure landing outside runway visibility, while the simplified version is used for airfields with a short runway and a minimum amount of airfield equipment.

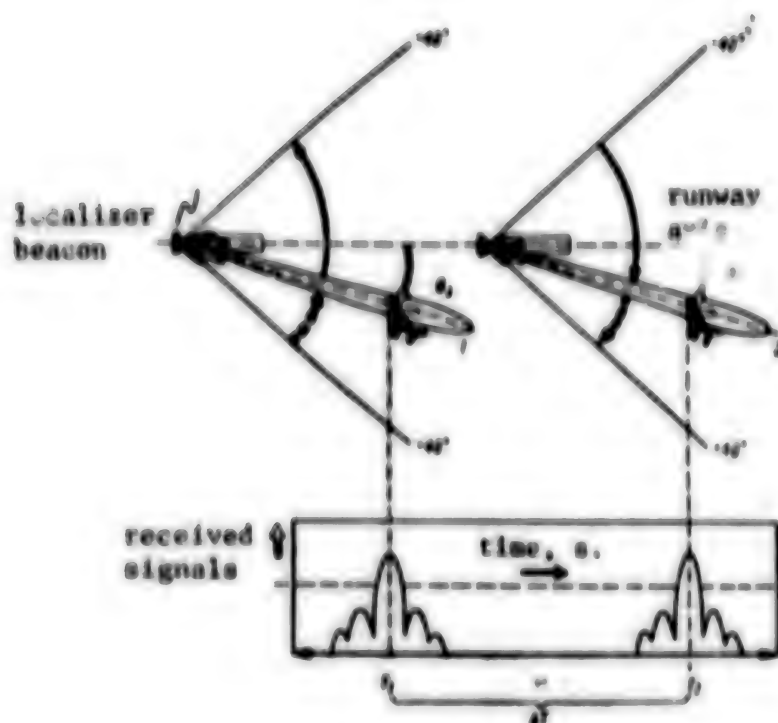


Fig. 1. Principle of operation of the localizer beacon of the TRSB/MLS system:
 1--first beam; 2--second beam; T_1 and T_2 --the time of receiving signals from the first and second beams, respectively; θ_0 --the deflection angle of the aircraft from the runway axis; ΔT --the time interval between the received signals from the first and second beams.

The zone within which the beacon signals are created and, consequently, a landing approach is possible is $\pm 40^\circ$ for azimuth for the standard variation, $\pm 60^\circ$ for the improved and $\pm 10^\circ$ for the simplified. The vertical approach area is from 0 to 15° (standard and simplified) and from 0 to 20° (improved). The width of the directional patterns of the localizer beacon is 1, 2 and 3° , respectively, and for the glide path beacons 1, 1.5 and 2° . The signals of the system can be received up to distances of 25-38 km. The rate of receiving data from the localizer beacon by the aircraft equipment equals 13.5 hertz, and for the glide path and rangefinder equipment, 40 hertz. The errors in determining the aircraft's position should not exceed 3 m and this, in the opinion of American specialists, ensures the carrying out of an automatic landing.

Judging from the statements in the foreign press, the United States plans to develop a portable version of the MLS system and this should be easily set up at a field airport. The range of its action will equal 18 km, and the zone of control for course will be $\pm 40^\circ$ and for glide from 10 to 20° . The radio beacons of this variation of the system called the JTMLS (Joint Tactical Microwave Landing System) will operate on frequencies of 5,000-5,100 megahertz and provide landing with a cloud level of 30 m. The equipment of the beacons along with the phased antenna array can be mounted on a tripod. The beacons weigh around 90 kg while the weight of the aircraft (helicopter) equipment is up to 10 kg.

Simultaneously with the testing and evaluation of the MLS system which, as the foreign press assumes, will last at least 10 years, the improved versions of the ground and onboard equipment of the ILS system will be manufactured and so-called "transitional" (from the ILS to the MLS) landing systems will be developed.

Since the ILS, according to an official decision of the ICAO, will remain standard until 1995, the American Wilcox firm in 1977, under a contract with the U.S. Air Force, began manufacturing 120 sets of the AN/GRN-29 equipment which is part of the ILS system. This will make it possible to land with a visibility of 360 m and a cloud height of 30 m. The equipment extensively employs solid-state elements and duplication of the basic assemblies. This, in the opinion of the specialists, will increase its reliability. The designated sets should be installed by 1981 at 70 U.S. Air Force air bases, and first of all at the Holloman Air Base in New Mexico. At the same time the firm is manufacturing new systems which provide for landing with visibility of 200 m for eight of the most important U.S. airports and around 120 sets for small civilian airports. The production of the equipment for the ILS system is being continued in Great Britain, the FRG and France.

As was pointed out by the foreign press, equipment is also being developed for the ILS system to be installed on military aircraft. Thus, the American Bendix firm in 1978 began producing two types of equipment for the U.S. Air Force: the AN/ARN-123 and -27. The fleet of ground facilities for the ILS landing system in Great Britain will be replaced by the Decca firm; in 1979 it concluded a contract with the Air Force to manufacture 31 sets of localizer, glide path and marker beacons. These will replace the obsolete equipment at 23 airfields in Great Britain, five in the FRG and one on the island of Cyprus. According to the statement of the Western press, the replacing of the ground beacons will not entail a change in the aircraft landing equipment.

The above-mentioned "transitional" systems partially employ the methods of the ILS and MLS systems. For example, the operation of the American ISMLS (Interim Standard Microwave Landing System) and the French SYDAC (Système d'atterrissage en bande C) is based upon the equisignal zone method inherent to the ILS system. But since the operating frequencies of these systems lie in the band of 5,000 megahertz, in using them to land, the aircraft, in addition to the standard course and glide path receivers, must also have a small-sized frequency converter.

For landing carrier-based aircraft, the United States employs the AN/SPN-41 system which in terms of operating principle is analogous to the MLS (it operates in a band of 15,400-15,700 megahertz). The scanning area of its antenna equals 40° for course and 10° for glide while the accuracy of determining the aircraft's position in the landing approach is 0.2° for course and 0.1° for glide. On its basis two modifications have been developed for the U.S. Army Aviation and the Swedish Air Force.

For the purposes of helicopter landing support, the U.S. has developed and tested a portable version of the AN/SPN-41 system which has been named PACSCAN (Fig. 2) [not reproduced]. The area of control for course has been reduced to 130° and for glide has been increased to 20°. The range of control is 55 km in clear weather and 18 km in range, while the accuracy of determining the helicopter's position is 0.1°. The equipment weighs 30 kg and the power required from the batteries is 150 watts.

According to announcements in the foreign press, the United States has also developed a landing system for the space shuttle (also a version of the AN/SPN-41 system). Because of the specific nature of the landing approach of the spacecraft, the zone of control in it for elevation has been increased to 30° and for course has been reduced to 15°. It has been announced that two sets of ground equipment should be manufactured for the system and these will be installed at the selected spacecraft landing points, at the Kennedy Space Center and Edwards Air Force Base in Florida (sic).

Radar landing systems, in the opinion of Western specialists, have the advantage that it is possible to land any aircraft regardless of its type and the presence of special equipment on it. And this is important because on a number of military aircraft, according to information in the foreign press, such equipment is lacking.

In recent years an essential feature in the development of radar systems has been the increase in the operating range of the radars included in the system (particularly for the airfield control radars). Thus, the systems developed over the last 10 years employ airfield control radars with a range of 95-100 km. This increases the traffic control area in the region of the airfield. Achievements in the designing of the equipment and the use of computers for processing the radar signals make it possible to increase the accuracy of determining the aircraft's location and hence the reliability of landing.

The most advanced are the American systems such as: the AN/TPN-19 and consists of the AN/TPN-24 and AN/GPN-22 radars. The AN/TPN-19 includes airfield landing radar and a landing control center. It can simultaneously handle the landing approach of six aircraft with an accuracy of around 2 m. In 1976, its first series-produced model was turned out and this was installed at the Tinker Air Force Base in Oklahoma. The equipment can be transported by various types of transport including rail, motor vehicle, sea or air. The time required to bring the system to a ready state is 2 hours.

A system which includes the AN/TPN-24 airfield control radar and the AN/GPN-22 landing radar is designed to be set up at airfields with heavy air traffic. By 1980, there are plans to deploy 11 AN/GPN-22 radars and six AN/TPN-24 radars at the U.S. Tactical Air bases. In addition to this, the AN/GPN-22 radar, as the Western press has announced, will be used in the Netherlands and Austria.

The British Ministry of Defense is to replace the radar landing systems and here 35 new systems of the GR-62 type will be installed at airfields inside the country, 5 in West Germany and 1 each on Cyprus and at Gibraltar. The system provides control of the landing approach from a distance of 28 km.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: CONTROL OF AIRCRAFT CARRIER AVIATION

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 8, Aug 80 (signed to press 7 Aug 80) pp 59-61

[Article by Candidate of Naval Sciences, Docent, Capt 1st Rank A. Lopukhin: "Control of Carrier Aviation Operations"]

[Text] One of the means for implementing the expansionistic plans of the U.S. ruling circles is the regular naval forces, the attack core of which is made up of aircraft carriers. The role and importance of the carriers is determined by their mobility, high combat stability, by the broad range of fire capabilities and significant range. They are charged, as the foreign press has stated, with helping to win and maintain supremacy at sea and in the air in the region of combat operations, the attacking of ground and sea targets with nuclear and conventional weapons, blockading sea areas and straits zones for the purposes of interdicting the reaching of the open sea by enemy ships, providing cover for landing forces and particularly important convoys in crossing by sea, as well as providing direct support to amphibious landings and ground forces in coastal areas.

Carriers are the main attack force at sea in conventional wars and a well-prepared reserve of strategic forces in a nuclear war. Moreover, the U.S. strategists consider them to be the most important instrument for achieving political aims in peacetime by a show of strength. Confirmation of this is the U.S. aggression against Vietnam, the numerous NATO exercises and recent events in the Persian Gulf area.

In noting the high combat capabilities of carriers, the U.S. Navy command at the same time has emphasized that the successful carrying out of the missions entrusted to them to a significant degree will depend upon the clear organization of control over carrier-based aviation operations.

The leadership over the combat operations of the carrier-based aviation is carried out by the carrier commander and the commander of the air wing through the appropriate services. As is pointed out in the foreign press, depending upon the missions to be carried out, the weather conditions, the time of day and the distance away from the carriers, the flights of the carrier-based aviation are under the control of: the commander of the aviation department, the air traffic control center (ATCC), the combat information center (CIC), the specially assigned ships and long-range radar spotter (LRRS) aircraft.

The commander of the aviation department is responsible for the take-off and landing of airplanes and helicopters and he controls them in circular flights during the day within a radius of 3-6 km.

The ATCC plans the flights and centrally controls the aircraft and helicopters within the zone of its responsibility (90-100 km from the carrier) and during circular flights at night. The CIC controls the flights at a distance of over 100 km.

The specially assigned ships and LRRS aircraft control the combat operations of carrier-based aviation outside the range of the carrier spotter radars and during operations over enemy territory.

In accord with the organization of service on carriers, the ATCC and CIC are part of the operations department which is responsible for the operations of the carrier-based aviation. The operations department is concerned with the collection, processing and analysis of information on the enemy forces (and one's own), the hydro-meteorological situation, and reports these data to the carrier commander and the commander of the air wing. In addition, it draws up possible variations for carrying out the combat mission, it plans combat operations and issues the missions set by it to the executors.

In addition to the ATCC and CIC, the operations department includes an automated intelligence center, an antiaircraft and ASW command post and an electronic countermeasures command post.

The automated intelligence center organizes the carrying out of visual (air), radio and radar reconnaissance as well as the collection, processing and evaluation of intelligence data gained from the special system.

The antiaircraft defense command post is responsible for centralized control over all air defense resources. It collects data on air targets, it is responsible for their identification and the alerting of the interested command groups, it assigns the loitering positions of the fighters and the LRRS forces, the positions for the maneuvering of the guided missile ships, it gives target designations to all the air defense resources and organizes their cooperation. The guiding of the fighters to air targets at the distant approaches is carried out from the escort ships and the LRRS aircraft.

The control of the ASW forces (including the ASW aircraft and helicopters) of the force is carried out from the ASW command post. Here they are responsible for the following: Collecting reports on the under-water and surface situation in the area, evaluating these data and preparing proposals for taking decisions to destroy the submarines, the alerting of all ships of a submarine threat and the assigning of forces to combat the under-water enemy.

The radio electronic countermeasures command post controls the radio electronic countermeasures equipment.

Control over the combat operations of the deck-launched aircraft is carried out by the combat information control system (CICS) of the ATDS. Its equipment is carried both on the carriers as well as on the LRRS aircraft the E-2C Hawkeye (see the figure) [not reproduced]. These ordinarily fly 150-300 km away from the carriers

at altitudes up to 10,000 m. From information received from various sources, this makes it possible to classify the targets, to determine the parameters of their movement, to assess the degree of danger, to select the type of weapons, to guide the interceptor aircraft and transmit navigation and control data. The equipment of the ATDS system carried on the LRRS aircraft is linked to the shipboard portion of the CICS or NTDS and AWACS (Airborne Warning and Control System).

One of the basic components of the ATDS system is the AN/AP5-125 radar. According to information in the foreign press, the range it can detect an enemy bomber at an altitude of 9,000 m is 740 km, for surface vessels it is 360 km, for bombers against a background of the land or sea around 460 km, and for cruise missiles 270 km. The onboard computer complex of the system makes it possible to display and process current information on 300 airborne targets simultaneously. The data on the nationality of the target, position, altitude and speed of flight are shown on a display. These are used for correcting the information stored in the central memory and then through the LINK11 system are transmitted to the CICS of the NTDS which is on the carrier as well as to the ATDS system of the other E-2C aircraft in order to transfer a portion of the functions of data generation for taking decisions to the central processor and automatically through the LINK4 system or manually select the interceptor and control it.

Each fighter assigned to the LRRS aircraft gives its position, weapons and available fuel. After selecting the interceptor, the processor of the ATDS system generates data on the nature of the mission to be carried out, the speed, altitude, heading and distance to the target and transmits these to the fighter. From information in the foreign press, the E-2C aircraft can control the actions of two interceptor squadrons.

In controlling deck-launched ground attack planes, the E-2C aircraft serves as an airborne command post from which over a special radio communications system the ground attack plane receives information on the nature of the terrain, the danger in the target area and the flight profile. Here telephone communications are used only in emergency situations. After the ground attack planes have carried out the mission, the E-2C aircraft guides them to the carrier.

This is brief information on the organizing of control over the combat operations of carrier-based aviation.

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PERCEPTIONS, VIEWS, COMMENTS

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Articles by Soviet authors and the chronicle were prepared from foreign press sources.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: TRENDS IN OPERATIONAL AND COMBAT TRAINING

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 9, Sep 80 (signed to press 10 Sep 80) pp 3-9

[Article by Col M. Vasil'chenko: "Basic Trends in the Operational and Combat Training of the NATO Joint Armed Forces"]

[Text] The most characteristic trait in the present military-political situation in the world is the growing aggressiveness of the political course being conducted by the U.S. and NATO imperialist circles. This is eloquently seen in the provocative actions by Washington against the peoples of Iran and Afghanistan and by the support given by the United States and their allies in the various blocs to the Chinese hegemonists and the reactionary regimes in the countries of the Near and Middle East and the racists in South Africa. But probably the main feature in the policy of American and NATO leadership recently has been the broadening of military preparations and a new, qualitative level in the preparations for an aggressive war against the socialist countries.

Since the start of the 1980's, the North Atlantic bloc solidly set out to implement a long-range military program which envisaged all-round modernization of its armed forces. The basic content of this program was the development, production and arming of the formations and units with the new-generation weapons and military equipment, primarily nuclear missile weapons and highly efficient types of conventional weapons, the full automation of all troop control processes and the creation of a mobile and flexible rear support system.

The carrying out of the long-range plans up to the year 1995 for the organizational development of the bloc's armed forces, as the NATO specialists estimate, is aimed at achieving NATO military superiority over the Warsaw Pact even by the second half of the 1980's.

According to announcements in the foreign press, at present the leadership of the North Atlantic Alliance is engaged in seeking out the optimum forms and methods for implementing the planned growth of the combat and operational capabilities of the existing groupings in the Joint Armed Forces (JAF) of the bloc. The scientific research centers and other facilities of the NATO military and civilian agencies have been widely involved in this. In planning out different variations for conducting combat operations against the Warsaw Pact countries, they have assessed the

balance of forces and have constructed forecasts for the possible course and outcome of armed combat between the opposing troop groupings in Europe up to the year 2000.

The designated questions are most fully studied in the course of operational and combat training for the NATO staffs and troops. In recent years this has become a most important means for studying the long-range problems in the bloc's military art and this has been largely aided by the structure of the existing system in NATO for training and anesthetizing the personnel. As has been emphasized by the foreign press, this training is based upon standard exercises each of which is characterized by a constancy of objective, participants and missions to be carried out as well as by periodicity of holding. In such operational measures, in addition to checking the level of the combat readiness of the formations, they study the questions of the influence of occurring or forecasted changes in the fighting strength, organizational structure and weaponry of their own and enemy troops on the possible nature of military operations in the individual theaters of war and in Europe as a whole.

The standard exercises are conducted on all levels, from the strategic element down to the formations and units of all the armed services. Such unification of measures and the broad use of formalized documents, as the foreign specialists feel, to a significant degree facilitate the preparation of the exercises and make it possible to process their results using computers. The acquired data are subjected to careful analysis, and on the basis of this corrections are made into the actual operational plans of all levels of NATO commands.

The next step in improving the system of operational training and raising its effectiveness as an instrument for studying the long-range military strategic problems of NATO was the combining of several standard measures into a series of exercises conducted under a single plan against a general operational-strategic background. The most indicative in this regard are the annual "Autumn Forge" Maneuvers. In concealing the true scope of militaristic preparations behind the guise of particular exercises, the NATO command rather fully checks out one of the variations for preparing for, starting and conducting a war against the nations of the socialist commonwealth.

In the process of improving the system of operational and combat training for the joint and national armed forces in the bloc's countries, great attention is given to raising the role of the upper staffs. The Western Press has emphasized that all measures on the strategic and operational level are planned and worked out by the joint commands. They are entrusted with the duties of monitoring the course of the combat training of the field forces, formations and units of the national armed forces of the member states which are part of the NATO JAF. Recently, under all the NATO staffs, special inspector groups have been set up with the mission of assessing the combat readiness and capability of the units and formations down to the battalion level, inclusively.

In recent years, accounting and data processing have been centralized for all the exercises held. This work is carried out at the Technical Center of the NATO JAF Staff in Europe and the NATO ASW Scientific Center in the Atlantic. The results obtained are used in studying the debated questions of modern warfare and for

working out specific recommendations for elaborating the plans for preparing for and conducting this war.

The nature of modern warfare and the methods of using the armed forces in it have been most fully and carefully studied, the foreign specialists feel, in the exercises held at the end of the 1970's. Precisely in this period (immediately after NATO had approved a 15-year program for military organizational development), the demands were sharply increased upon the operational preparation of the staffs and the combat readiness of the troops and naval forces. In the course of the maneuvers and exercises the command of the North Atlantic bloc in practice has been searching for an answer to the question of how to employ most effectively the new weapons and benefit from the military superiority over the Warsaw Pact countries which the command hopes to achieve.

The foreign press has pointed out that the aim of the operational and combat training, as stemming from the basic provisions of the strategic concepts accepted in NATO, should reflect the evolution in the views of the bloc's military political leadership on the nature of war. In analyzing the NATO JAF exercises of recent years, foreign reviewers have disclosed a number of new aspects in the theoretical views concerning the conduct of a coalition war. These views appeared in the 1970's and have showed a tendency for further development.

The reviewers feel that in the "flexible response" strategy there has been a final reassessment of the place of each of the possible types of warfare. While previously the basic emphasis was put on preparations for an all-out nuclear war, at present the NATO plans give great attention to a sharp rise in the preparation of the staffs and the troops for initiating and conducting a limited (not reaching the scale of an all-out nuclear) war. This war has prefixed spatial limits (the European and Atlantic theaters of war) and the types of weapons to be used (conventional, chemical and tactical nuclear weapons). At present, this type of war is viewed not as the first step in an escalation of the use of weapons (from the conventional to the strategic nuclear weapons) but rather as a completely independent type.

In the NATO exercises, variations are also worked out for the initiating and conducting a limited war in Europe, and in accord with these the assault groupings of the bloc's JAF should for a long time successfully carry out the missions confronting them without resorting to nuclear weapons.

The idea of isolating a war in Europe originated with the U.S. military political leadership and was voiced by them in the 1960's. However, for a long period of time these plans were not supported in the Western European countries. The governments of the latter felt that only the use of American strategic nuclear forces from the very outset of the war or after a short period of conducting it with conventional and tactical nuclear weapons would make it possible to achieve decisive success in the armed clash between the two world systems. Subsequently the recognition of parity with the Soviet Union in strategic nuclear forces and the ensuing conclusion on the inevitability of a retaliatory strike against U.S. territory in the event of initiating an all-out nuclear war by the United States forced the Washington strategists into a "stalemate": on the one hand, for achieving the global imperialistic aims it was essential to continue preparations for a war (including a nuclear missile one), and on the other, to minimize the possibility of a

retaliatory strike. As a way out of the given "blind alley" the decision was taken to "arm-up" the NATO countries, to develop the "Eurostrategic nuclear forces" and raise the general purpose forces to a new, qualitative level. This was the main content of the long-range military planning in the bloc.

The implementation of the planned programs, in the assessment of the Western military specialists, would make it possible for the bloc to conduct a war against the socialist countries in resorting to the use of not all the might of the U.S. strategic nuclear forces but only a portion of it. Very indicative in this regard was the regular involvement of the American B-52 strategic bombers in the exercises conducted in Europe. The joint NATO staffs in this way gained practice in planning the combat employment of the U.S. strategic offensive forces and in controlling them in the making of strikes. While still not officially recognizing the concept of a "Eurostrategic war" as one of the types of war, the NATO leadership has already begun to prepare its armed forces for this.

Simultaneously with increasing the nuclear potential of the NATO JAF, the command of the North Atlantic bloc has been giving more and more attention to increasing the capabilities of the staffs and the troops to conduct a war employing only conventional weapons. This has been due primarily to the appearance of guns which guarantee the hitting of the target on the first round, to the use of highly efficient ammunition, to the automating of the troop and weapon control processes and to the increased mobility of the formations and units on the battlefield. In addition to the above-indicated factors which influence the growth of the operational-tactical capabilities of the armed forces, ways have been sought out to rapidly achieve superiority in forces on the strategic scale. The NATO command sees the solution to the given problem in improving the strategic deployment system and primarily in creating conditions for rapidly increasing the JAF groupings of the bloc in Europe by ferrying reinforcements from the United States, Great Britain and Canada.

As the foreign press has stated, by stockpiling heavy weapons and military equipment on the territory of the Western European countries and by increasing the capabilities of the military air transport, by 1984 the United States will be capable of increasing the grouping of its ground forces by 2.5-fold within 2 weeks, and by almost 3-fold for tactical aviation.

In recent years the Pentagon, in ferrying American reinforcements and in carrying out other operational measures, has endeavored to "pass through" Europe all the formations and units of its regular troops and their reserve components. In linking these actions of the American military with the announcements of officials on the revision of military strategic plans by Washington because of the present Chinese policy, foreign reviewers have felt that there will be a retargeting to Europe of those formations and units which previously were to be used for operations in the Far East.

The ability of the higher NATO military political bodies to effectively lead the JAF in the course of a coalition war, in the assessment of the Western specialists, will be largely determined by the establishing of cooperation in peacetime between the formations of the various nationalities, by a unity of views among the representatives of the member nations on the nature of the war (operation) and the

principles for the combat employment of the troops, as well as by the acceptance of common operational-strategic standards and terminology for all the states.

For this purpose in recent years the member countries of the North Atlantic bloc have worked out a number of new regulations and manuals which, in accord with the NATO recommendations, incorporate provisions on coalition war and the procedure of actions for the formations (units) in the multinational field forces (formations). In particular, this has been reflected in the U.S. Army Field Manual FM 100-5.

The foreign press has emphasized that all the common-bloc regulations and manuals were drawn up on the basis of the corresponding American documents considering the acquired experience of the exercises conducted in NATO. A unified military terminology was introduced. Moreover, it was decided that cooperation between the formations and units (ships) of differing nationality should be carried out in English.

The working out of the questions of cooperation is one of the most important tasks of the exercises for both the joint and the national armed forces. In recent years, subunits and units of other bloc member nations have begun to be involved in exercises carried out under the plans of the national commands. Thus, in the Central European theater of war, virtually all of the corps and a significant portion of the divisional exercises were carried out on a multinational basis. There has also been a rise in the level of the staffs which in the course of NATO exercises actually organize close cooperation. Very indicative in this regard was the headquarters exercise conducted in September 1979 under the name "Constant Enforcer"* involving troops of the Central Army Group. For the first time it actually worked out the entire range of questions involved in organizing cooperation on the boundary of the III West German and V American army corps in conducting combat operations using conventional weapons and chemical weapons.

All the operational plans of the NATO JAF, as is pointed out in the foreign press, have been worked out in such a manner that from the very outset any armed conflict in Europe would assume the nature of a coalition war. Here an important role, in the assessment of foreign experts, should be played by the NATO mobile forces which are a comparatively small contingent of armed forces represented by seven reinforced battalions of ground forces, six tactical air squadrons and the corresponding combat and rear support subunits of the United States, Great Britain, the FRG, Italy, Belgium, the Netherlands and Luxembourg.

The subunits of this "fire-fighting team" directly before the initiating of an aggressive war in Europe are to be shifted to one of the most "threatened" areas located on the flanks of the bloc (the Baltic and Black Sea straits, Northern Norway and Eastern Turkey). They would be the first to engage in combat and this would ensure the automatic involvement of all the nations of the bloc in the war.

The ferrying of mobile forces to the flanks of the bloc and their use in the course of combat operations are worked out fully at least twice a year in the NATO JAF exercises of the "Express" type. It has already become a system to conduct such

*For more detail see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 3, 1980, pp 37-38.--Eds.

demonstrations of strength in the winter in the Northern European theater of war and in the autumn in the Southern European one. In recent years, an ever-larger number of troops has been involved in them. Thus, the forces of the U.S., British and Dutch marines participated in working through the questions of the combat employment of the subunits from the mobile ground troops and air forces on the northern flank. More than 20,000 servicemen from seven countries of the bloc were moved to Northern Norway in the exercises conducted in March 1980 for the NATO mobile forces under the code name "Anorak Express-80."

Civilian authorities and various organizations from the bloc's countries have begun to be widely involved in the NATO JAF exercises. This makes it possible, the foreign specialists feel, to carry out comprehensive preparations for a war, that is, to also solve political and economic problems. For example, at the strategic headquarters exercise "Wintex-79" the civilian bodies worked out plans for mobilizing economic resources, for readying the civil defense system and for the complete support of activities carried out by the armed forces. In addition to participation in such measures, independent exercises of the "Simex" type are also conducted with them. The given trait in operational preparations shows the steady trend toward the militarization of all aspects of NATO activities.

As for the possible forms and methods of conducting a limited war in Europe, as before, the command of the North Atlantic bloc proceeds from the requirements of the "forward defense" concept, investing a qualitatively new content into it. From the very outset of the war the troops are confronted with the mission of defeating the opposing grouping of Warsaw Pact troops by employing decisive actions of the forward troop groupings and combining nuclear strikes with the massed use of conventional fire power. In the event of the unsuccessful outcome of a border engagement for NATO, the attack against the advancing enemy is planned on the forward line. Here the excluding of even minimal losses of own territory has become a most important demand.

The experience of the strategic headquarters exercises and maneuvers in the "Autumn Force" series in recent years has provided reason for the Western military observers to feel that in a limited war in Europe a strategic operation in the Central European theater of war and operations by the groupings of the bloc's JAF in the zones of the Northern European and Southern European theaters of war will remain the basic forms of operations for the NATO troops. The strategic operation in the Central European theater of war is to be a group of intercoordinated actions by the field forces of the armed services, that is, operations by army groups and tactical air forces, actions of strategic forces and the navies.

For concealing the aggressive plans, usually in the exercises (according to the overall plan) initially the strategic initiative in the war is taken by the troops of the Warsaw Pact countries. In the first stage (around 7 days) operations are carried out by army groups for the purposes of halting the "enemy" offensive on the forward line. By the massed use of strategic and tactical aviation and the guns of the ground forces, combined with counterthrusts by the operational reserves, a decisive defeat is caused to the enemy, and in the second stage (around 3 days), after the committing of the strategic reserves to the engagement, the defeat of the "enemy," is concluded in the course of a general counteroffensive and favorable conditions are created for conducting the subsequent strategic operation.

In recent exercises, the use of tactical nuclear weapons has been made dependent upon the ability of the NATO troops to seize the strategic initiative. Frequently the command of the bloc has endeavored to use only conventional weapons. The foreign press has emphasized that while at the beginning of the 1970's in similar instances the command took the decision to make the first nuclear strikes in the second or fourth day, in recent years in the exercises this question has been considered not sooner than 7 days into the playing through of combat operations. These changes have occurred primarily under the influence of the increased combat potentials of the NATO JAF groupings in terms of conventional weapons.

In contrast to the Central European theater of war, the physical geographic conditions of the northern and southern flanks as well as the isolation of the NATO troop groupings created here, in the assessment of the NATO command, impede the conducting of such large-scale actions as strategic operations in these regions. Here in a limited war they plan to conduct combat operations along separate, isolated operational axes.

The troops and naval forces are usually given missions of sealing off the straits zones, retaining important base areas, securing the flanks of the basic grouping of the NATO JAF in the Central European theater of war and so forth. The success of these operations depends, as a rule, upon the prompt ferrying of reinforcements to the designated regions. In recent years all the NATO exercises conducted on the flanks of the bloc have concluded with the working through of questions involved in landing a large amphibious force. This force was usually based on a multinational expeditionary formation which included marine units and subunits of the United States, Great Britain, the Netherlands, Italy and Turkey. The Western press sees the wider involvement of the American marines as an important feature in many stagings of a war.

The designated trends in the operational training of the NATO staffs, troops and naval forces objectively reflect the basic drive of the bloc's leadership to seek out more appropriate forms and methods for the present-day situation to conduct armed combat against the countries of the socialist commonwealth. Here one can note a tilt toward more decisive forms for the employment of the armed forces, and this shows a greater aggressiveness in the global policy of world imperialism and its desire to prevent by any means its defeat in the historic dispute of the two systems. The aggressive focus of the operational and combat training of the NATO staffs and troops obliges the Soviet military to constantly raise its combat readiness and along with the men of the fraternal countries of the socialist commonwealth to vigilantly guard the victories of socialism.

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PERCEPTIONS, VIEWS, COMMENTS

U.S.: COMMENTS ON IRAN RESCUE OPERATION

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 9, Sep 80 (signed to press 10 Sep 80) pp 9-13

[Article by Col A. Marov and Lt Col V. Katin: "The Failure of the American Adventure in Iran"]

[Text] The U.S. airborne operation in Iran during the night from 24 to 25 April 1980 known under the code name of "Blue Light" was marked by exceptional adventurism which is so inherent to the policy of the present White House leadership. Judging from the numerous announcements in the foreign press, its aims were not so much to liberate the American hostages held in Tehran, as Washington has endeavored to show, but rather went much farther. The landing of the Americans near Tehran should have been the beginning of a counterrevolutionary revolt in Iran, it was to help in the seizing of power by pro-American elements and ultimately lead to a rapid and fundamental change in the situation in the Middle East in the favor of the United States.

At the White House the supporters of a hard course vis-a-vis Iran felt that the seizing of the hostages provided a good pretext for the United States to justify any actions, including military ones, against not only Iran but also other Middle Eastern countries. Thus the problem of the held Americans began to be used in a larger political game to strengthen American influence in the region and increase U.S. prestige among its allies. However, above all it became one of the pretexts for increasing the U.S. naval grouping in the Persian Gulf zone.

Having decided on this step, President Carter was also pursuing his own ambitious aims. The success of the operation undoubtedly would increase his popularity, help the election campaign and would give him significant advantages over the other candidates in the struggle for the position of president. On the political level, Carter considered this step infallible. Even in the event the operation did not succeed he counted on gaining political capital among the chauvinistically inclined portion of the American voters.

Since so much was staked on this card, the operation was prepared for with particular care. The plan for it began to be worked out in deepest secrecy back in November 1979 immediately after the seizing of the American hostages in Tehran. Involved in the drawing up of this plan were the president's Assistant for National Security Brzezinsky, the Secretary of Defense Brown, the Chairman of the Joint

Chiefs of Staff (JCS) Gen Jones, the CIA Director Turner and Vice President Mondale. The final order to carry out the operation was given by Carter on 14 April. For carrying it out in the United States a special-purpose detachment was organized under the name of "Delta" consisting of 90 servicemen (basically air force and marine personnel). A portion of the saboteurs had a perfect knowledge of Farsi.

One of the most experienced specialists in subversive actions, Col (Arm) Beckworth was appointed the commander of the detachment. During the aggressive war in Vietnam he had headed a special CIA sabotage and punitive detachment. Overall military leadership over the operation was entrusted to Maj Gen (Arm) Voth and Maj Gen (AF) F. Guest, the former chief of the mission of American military advisers in Iran.

The training of the detachment was carried out in the U.S. Special Forces School in Fort Bragg (North Carolina) and in the desert areas in the states of Utah and Nevada where the climatic and topographic conditions are similar to Iran. In the course of the preparations the detachment of the personnel repeatedly simulated the capture of the American Embassy building in Tehran, a model of which had been built at Fort Bragg and worked through other elements of combat operations.

Simultaneously with this, there was a strengthening of the "fifth column" in Iran itself. The United States illegally sent a significant number of American intelligence agents there. In addition, the agents from local residents were increased and brought to a state of combat readiness. The basis of these agents were former coworkers in the shah's security service, SAVAK, and pro-American persons in the Iranian armed forces and leadership. A portion of the agents, according to certain information in the foreign press, infiltrated even the persons around Ayatollah Khomeini.

On the territories of Egypt and Oman, for developing the success of the operation and for supporting the counterrevolutionary revolt, armed detachments were organized from former servicemen in the shah's army (up to 10,000 men) and these were to play the role of the "liberating Iranian army."

In support of the operation an important role was assigned to the C-130 aircraft and the RH-53D helicopters equipped with weapons and special gear, including rapid-firing cannons, machine guns, chemical ammunition, powerful radios with scrambling equipment and night vision instruments. Plans were also made to involve the U.S. carrier-launched aviation for covering the forces involved in the operation from the air and for making strikes against the Iranian military objectives in the event of resistance from the Iranian armed forces.

On the eve of the operation, detailed reconnaissance was conducted on the planned landing areas for the C-130 aircraft on Iranian territory and a special meteorological support system was created. The route of flight over Iran was chosen considering the particular features of the radar detection system and the disposition of the national air defense forces. And the security was checked out in practice. Two weeks prior to the operation a C-130 aircraft flew to the first landing point in the Great Salt Desert and landed there, while the crew on board conducted reconnaissance, surveying and preparation of the landing area for the subsequent receiving of the aircraft and helicopters.

Egyptian-based E-3A aircraft of the AWACS system were assigned for maintaining cooperation between the sabotage detachment and aviation and for ensuring communications with the command centers, including the U.S. President. For this purpose it was also decided to employ two military communications satellites which had been put into orbit at the end of 1979 and one of which was constantly stationed over the zone of the Indian Ocean.

At the same time, careful measures were taken to conceal the preparations for the planned action. Before the operation, under the pretext of exercises, the United States increased the number of flights by military air transport between Egypt and Oman and intensified combat preparations in the Persian Gulf and Indian Ocean. Two days before the landing the White House contributed to an intentional "leaking" to the press of information that the plan for the release of the hostages had supposedly been rejected at a meeting with the U.S. President.

The operation was to be conducted in several stages. And, as the Western press has announced, its scenario looked approximately as follows.

In the first stage, six C-130 aircraft with the saboteurs and fuel for the helicopters were to covertly penetrate Iranian airspace and land in the desert 430 km to the southeast of Tehran (in the region of the town of Tabas) not far from the highway connecting the towns of Yazd and Mashhad (Fig. 1) [not reproduced]. Here they were to be joined by eight RH-53D helicopters from the carrier "Nimitz." The helicopters were to be refueled and then transport the personnel of the "Delta" detachment to a mountainous region 150 km to the east of Tehran, where the saboteurs were to wait for the onset of night. The C-130 aircraft were to return to Oman.

During the night of 25-26 April, the saboteurs in covered trucks supplied by agents were to be transported from the refuge area to the suburbs of Tehran to a building belonging to one of the agents. After sizing up the mission, they, in acting in two groups, were to release the 50 American hostages held at the embassy as well as the 3 hostages in the Iranian Ministry of Foreign Affairs. Up to 100 American intelligence agents previously dropped into Iran were also to be involved in implementing this part of the operation.

For neutralizing Iranian resistance in the course of freeing the hostages, the plan was to use chemicals which temporarily disabled people. These substances when necessary could be sprayed from helicopters over significant areas.

In the second stage, the liberated hostages and participants in the operation, including a portion of the intelligence agents and local agents (a total of up to 200 people) were to assemble at a stadium near the U.S. Embassy building. By the same time helicopters were to arrive there and they would transport the entire group to the previously designated rendezvous area with the C-130 aircraft which had flown in from Oman. The helicopters were to remain on the spot while the transporting of the freed persons and support groups outside Iran would be carried out on the aircraft.

For covering the actions during the evacuation stage, A-7 and F-4 aircraft had been assigned from the carriers "Nimitz" and "Coral Sea." The carrier-based aviation, in the event of necessity, could attack Iranian military installations and above all the military airfields.

The storming of the embassy and the Ministry of Foreign Affairs was to serve as the signal for the beginning of actions by the American agents who were to carry out a series of powerful explosions in Tehran and other cities, to spread panic among the population and cause mass disorders. The agents and the local counterrevolution were to isolate and, if possible, physically eliminate Khomeini, his closest associates and certain members of the revolutionary council and government. All of this, along with the disrupting of normal life in the country, in the plan of the organizers of the operation, would create conditions for the seizure of power in Iran by pro-American elements. There were plans to ferry detachments of the "Liberation Iranian Army" into Iran for developing the success of the counterrevolution.

A strong expeditionary grouping of the U.S. Navy was to provide the moral and material support for the Americans' henchmen in their fight against the Khomeini supporters. This support could be needed by the counterrevolution after the beginning of the revolt, that is, at the end of April and the beginning of May 1980. By this time the naval grouping was to include four attack carriers and one amphibious landing group. Never before had the United States had such a number of ships in this region.

The carefulness of the planning, the large number of well-equipped and trained forces, the high secrecy of the preparations and the reconnaissance and camouflaging carried out should have provided, in the opinion of the operation's organizers, for its guaranteed success. Being confident of this, Carter issued the order to carry out the anti-Iranian action.

Operation "Blue Light" began strictly according to plan. The C-130 aircraft took off from an Egyptian airfield (according to certain statements, from Oman) during the night of 24-25 April. Three of the aircraft carried the personnel of the "Delta" detachment, motor vehicles, motorcycles, weapons and ammunition, while the remainder carried fuel for the helicopters. The RH-53D helicopters which had been specially reequipped and had an increased flight range took off from the carrier "Nimitz."

From the very beginning the course of the operation became complicated. In entering Iranian airspace, one of the helicopters was forced to land due to technical reasons. Its crew was picked up by one of the helicopters in the group, while another because of a failure in the navigation equipment went off course and returned to the "Nimitz." The remaining six airplanes and six helicopters landed at the intermediate base on 25 April at 0003 hours local time. Here a third helicopter broke down with a major malfunction in an important assembly of the hydraulic system being discovered in an inspection. According to the plan, such a situation would mean the aborting of the operation, since five helicopters could not ensure the dependable execution of the second stage. The military leaders of the action reached the conclusion that it should be canceled. Their report was the grounds for President Carter to take the decision to abort the operation. The evacuation was carried out in a great hurry and panic. Neither the extensive training, the careful preparations nor the experience of the leader who was "famous" for similar operations in Vietnam could help. The confusion and panic led to a situation where one of the helicopters, in taking off to change parking positions, struck the fuselage of one of the airplanes on the ground with a rotor blade. The helicopter and the airplane caught fire and the ammunition and fuel in them began to explode

(Fig. 2) [not reproduced]. Here five crew members of the C-130 and three marines in the helicopter lost their lives. Col Beckworth ordered that the four helicopters still in working order be abandoned and in these were left even secret documents, including the plan for the capture of the U.S. Embassy in Tehran. The entire group loaded up quickly on the C-130s and took off for Egypt.

The outright cowardliness and inefficiency shown by the leaders of the direct actions in the course of carrying out the operation forced the JCS to set up a special expert commission to study the causes and circumstances in the failure of the operation.

Thus, the American adventure failed. It cost the Carter Administration approximately 150 million dollars. But it was not merely a question of financial and human losses.

One of the most undesirable consequences of this failure for the U.S. leadership was the growing doubts among Americans of the political and military competence of the present administration. If there had been a fiasco for a limited operation which personally involved the president, the foreign press emphasized, then could one count on the U.S. government and military command in the event of a serious military conflict? The American military is asking itself this question more and more often, particularly those who unconditionally support the decisions taken at the White House and Pentagon. The completely obvious aim of Carter to use the operation in Iran for increasing his own prestige sharply shook the confidence of the U.S. officer corps that the American armed forces serve only general national objectives and are not a weapon in the hands of individual politicians. A special Pentagon expert commission was organized for neutralizing such feelings in military circles as well as for preparing recommendations for the purpose of "improving future similar operations."

The failed operation caused serious concern among the Western European allies of the United States over the unpredictability of the foreign policy of President Carter and engendered a tendency among the leaders of the Western European nations to more closely follow the activities of the United States in the regions of their so-called "vitally important interests."

The adventure in Iran again strikingly showed the entire world that for the sake of achieving its aggressive objectives American imperialism would stop at nothing. In continuing to dream about world domination, certain highly placed figures in the United States are ready to undertake the most irresponsible actions. And not only in Iran! No one should forget this.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: AIR RECONNAISSANCE REQUIREMENTS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 9, Sep 80 (signed to press 10 Sep 80) pp 43-48

[Article by Doctor of Military Sciences, Prof, Col A. Krasnov: "Requirements on Air Reconnaissance"]

[Text] The militaristic circles of the NATO countries, in frightening the world community with the myth about the "Soviet military threat," are continuing to increase the pace of military preparations. At the same time, the Atlantic strategists are emphasizing that the high military potential achieved as a result of the arms race will not be realized without possessing exhaustive information on the troops and objectives of the opposing side. In line with this they give great attention to developing all types of reconnaissance, including air reconnaissance which, in their opinion, is capable of providing systematic observation of various objectives, including moving small sized ones, and in a short period of time deliver the acquired data to the command.

In working out the requirements for air reconnaissance, the NATO military experts proceed from the view that these requirements are not fixed but rather change constantly depending upon the needs of the troops, the growing capacity to camouflage installations and the greater power of enemy air defenses. In tracing how the requirements for air reconnaissance have altered, depending upon these three basic factors, they point out that such traditional ones as promptness, continuity and secrecy of reconnaissance, reliability, accuracy and visibility of information, without altering their essence, have presently assumed a different content and a number of fundamentally new demands have also arisen.

The need of the troops for reconnaissance information, in the opinion of foreign military specialists, is the most important factor determining the requirements for air reconnaissance. Here they consider the changes occurring in the technical equipping of the troops and their greater mobility, maneuverability and strike power.

For example, Maj Gen C. Daniel, chief of the U.S. Army's Administration for Research and Development of Electronic Systems, has pointed out that "the battlefield in a future war will be totally different in comparison with the period of World War II and this is determined chiefly by the high degree of mechanizing the troops. This makes it difficult for a commander to determine the direction of the enemy's main

thrust and requires great effort from intelligence to disclose its reserves which are to be destroyed and to detect the vulnerable points."

The foreign press has stressed that modern tanks, armored personnel carriers and infantry combat vehicles are highly maneuverable machines capable of operating to a great depth, the artillery systems provide greater firing range and rate of fire than the former models while the mobility and accuracy of firing the missile systems have increased (for example, the road speed for the self-propelled Lance launching units is around 60 km per hour, and the accuracy of their firing, in the opinion of the NATO military leaders, makes it possible to employ the missiles even with conventional warheads). All of this increases the spatial scope and speed of combat, and this, in turn, places more rigid demands upon air reconnaissance in terms of its continuous conducting, the accuracy of the acquired data and the dimensions of the surveyed areas. The realization of them, in the opinion of the NATO military specialists, is conceived of by utilizing various types of aircraft for the troops, including unmanned reconnaissance aircraft which can remain over the battlefield for a long time, the improving of reconnaissance equipment and the organizing of a unified system of target detection and observation.

The qualitatively new aspects in the demands on air reconnaissance have made constant changes in the need for acquired information by the involved bodies. Here the new feature, in the opinion of the Western experts, is that even the same "consumer" will require specific data and a varying degree of detailing in the various stages of combat operations.

For example, in analyzing the activities of air reconnaissance from the experience of previous wars, foreign specialists have pointed out that during the aggressive war in Vietnam, the American reconnaissance planes, in carrying out missions for the Air Force command, photographed the proposed objectives of the strikes from altitudes of 17,000-18,000 meters and, as a rule, a day before the carrying out of the massed raid. These data were used to study the overall characteristics of the targets and to draw up the plan for the strike. Additional reconnaissance (low-altitude photographing) was carried out 1-2 hours before the strike to clarify and make a detailed study of the objectives. For monitoring the results of the strike, the objectives were rephotographed from low and medium altitudes.

In line with the growing interest in reconnaissance information from the ground forces, the air forces and the navies, a clear allocation of efforts between the various command levels is becoming a most important demand on air reconnaissance. For realizing this, abroad it is considered advisable, in organizing air reconnaissance, to determine its role and place in supporting the combat operations of the armed services, proceeding from the following indicators: the areas of operations and the necessary frequency of viewing the objects, the freshness and accuracy of the data, the resolution of the equipment under various meteorological conditions and the possibility of reconnaissance with various resistance from enemy air defenses.

According to the views of foreign specialists, in all instances the demand for the freshness of information is in the forefront, since even a comparatively short delay in receiving it is fraught with the most unfavorable consequences. Prompt information is particularly essential in organizing combat against nuclear missile

weapons which remain in firing positions only a few moments. The necessity of detecting the nuclear missile weapons and conducting reconnaissance of highly mobile formations on a time scale close to real has been constantly emphasized in the foreign press.

One of the ways for solving this problem in NATO is considered to be the introduction of special equipment for rapidly transmitting information from on board the reconnaissance planes to ground data collection and processing points. For example, at the beginning of the 1970's, the United States developed a system for transmitting video signals from the airborne side-viewing radar to the ground. This makes it possible to rapidly transmit the data from the aircraft, however several hours are required to convert the signals into a radar image of the terrain at the ground station. For this reason, work is being done to accelerate the signal processing by incorporating an electronic computer. Foreign specialists have acquired better results in developing a data transmission system from airborne TV equipment. Thus, the American RF-4C reconnaissance planes (Fig. 1) [illustrations not reproduced] carry equipment which transmits the obtained images to the ground receiving station with a delay of just several seconds.

At the same time the foreign press has pointed out that a large portion of the information is recorded on photographic film and is sent to the processing center after the reconnaissance plane has landed. For this reason in the air forces of the United States and the other NATO bloc countries as before devote great attention to the ability of the personnel to rapidly unload the photographic equipment (Fig. 2), to develop the film by express methods and decode it in a short period of time.

The hardening of demands upon the freshness of information has involved a new feature the essence of which has been formulated by the Western experts as a relationship between the reconnaissance and combat operations of the ground forces and aviation. They feel that such a relationship should be very close, and the reconnaissance equipment here, in essence, becomes an inseparable part of the troop control system. In taking up this question, the above-mentioned general C. Daniel asserted that "the system of reconnaissance, observation and target detection should continuously interact with the control and communications system." Here abroad it is felt that the collection and processing of intelligence information should end with the depicting of the results directly on the displays (electronic panels, television screens, plotting boards and so forth) of its users both according to a unified program as well as under a selective one, with a certain priority and in a form which is required by each of them. Provision is also made for interaction between the intelligence agencies of the ground forces and air forces. The foreign press has pointed out that by combining the actions of the intelligence subunits of the air force and army it is possible to more accurately determine the organization, fighting strength and position of the enemy, to ascertain its intentions, the air defense system, the nuclear attack weapons and solve other important questions. Under this condition the information can be obtained promptly in the various stages of combat operations. However American experts have complained that the existing U.S. Army reconnaissance system corresponds poorly to the required links between the ground forces and the air force.

Coordination between air reconnaissance and aviation combat operations has been much better organized. The joint actions of the reconnaissance aircraft with the air units and subunits are systematically worked out in exercises. For example, in the U.S. Air Force TAC exercises under the "Green Flag" Program which in 1977-1978 alone involved over 1,300 tactical aviation crews, all the reconnaissance squadrons operated under a single plan and the allocation of missions between them was carried out in close relation to the nature of aviation combat operations. Here, in addition to obtaining data on the ground installations, the missions of reconnaissance included the selection of visual and radar markers essential to the crews of the attack air units and subunits for navigating along the route and for identifying the targets.

The growing capabilities of camouflaging the installations, as the NATO military specialists point out, also necessitate greater demands on air reconnaissance. They feel that the equipping of the reconnaissance aircraft with diverse optical, infrared and radar equipment has entailed the development of new means for camouflaging installations and these, incidentally, have begun to be evermore widely used in the armed forces of the NATO bloc itself. For example, for camouflaging tanks and artillery guns' nets have been developed made out of fiberglass and these completely alter not only the outlines of these objects but also their radiation patterns in the infrared and ultraviolet wave bands; these nets also significantly reduce the level of the radar signals returned by them. In particular, the level of the signal returned from a tank is 13-15 decibels. The camouflage net reduces this to 7-10 decibels, that is, approximately to the level of the signals returned by the terrain. Other camouflage resources are also being developed, for example, devices for setting smokescreens. Screening camouflage paints are being more and more widely used with special admixtures which reduce the level of infrared radiation from the covered models of combat equipment and other objects.

Moreover, at airfields a significant portion of the military equipment, above all aircraft, is being placed in shelters designed for protection against air strikes and in order to make the airfields themselves less visible, the runways, taxiways, parking areas and other facilities are painted to match the terrain background. For example, at the Haan Airfield alone (8 km to the northwest of Solingen, FRG) around 400,000 m² of surface have been painted in camouflage colors. The new mobile radars which are being received by the troops are located in shelters, and their antennas, while being located outside, are little noticeable in viewing from the air.

NATO military experts feel that the growing concealment of objects from air observation using various types of equipment is a basic feature which dictates the following demand on air reconnaissance: the ability to detect and determine the characteristics of carefully camouflaged targets.

For seeking out and detecting such objects, in their opinion, it is essential to have the integrated use of the available equipment, a further improving in the tactics of the reconnaissance aircraft crews and the seeking out of new ways for detecting the targets which do not reveal themselves by active operations (the missile launchers before moving into firing positions, aircraft in shelters) but from indirect signs. However they consider the equipping of the aircraft with more advanced highly-sensitive equipment as the basis for carrying out this requirement.

Proceeding from this, the United States and other capitalist nations are working out reconnaissance systems designed for detecting the lowest-contrasting and smallest-sized objects both during the daytime and at night. The Western press has announced that the French Mirage-4 aircraft which have been modified for conducting aerial reconnaissance carry equipment capable of responding to temperature differences of less than 1° C and differentiating between objects located 50 cm apart from an altitude of 17,000 meters. Abroad great hopes are placed upon the integrated multipurpose reconnaissance equipment which picks up the radiation from objects in different wave lengths since the greater the number of bands in this equipment the more dependable the information obtained by it.

However the appearance of diverse reconnaissance equipment and its high productivity lead to a rise in the number of sensors and consequently to an increase in the amount of information and the time for processing it. In this regard the foreign specialists have feared that with such an abundance of information a significant portion of it can be lost before being processed.

For this reason one of the basic demands made upon air reconnaissance under present-day conditions is the following: the ability to quickly receive and process a large amount of information and to bring the results of the processing to the concerned parties within the shortest time. The foreign military specialists see the way out of the created situation in automating these processes. The newly developed reconnaissance systems, in their opinion, should be complexes of automated sensors, receivers and high-speed computers linked up by dependable communications lines.

The increased strength of enemy air defenses. The air force command in a majority of the NATO countries has pointed out that modern air defenses have significantly complicated the penetrating of reconnaissance aircraft to the objectives. The command feels that it is not advisable to assign resources for neutralizing enemy air defenses in the interest of supporting an overflight by individual reconnaissance planes. In this regard the concealment of conducting reconnaissance under the conditions of active enemy air defense operations becomes an important factor for which the personnel must be trained and the requirements defined for the reconnaissance aircraft, their equipment and protective gear.

The tactical training of reconnaissance aircraft crews, in the opinion of foreign specialists, should be based upon profound knowledge and the full use of the combat capabilities of their aircraft as well as on the integrated use of the individual protective devices and various maneuvers. Here they emphasize the necessity of working out new procedures along with certain ones which have been tested out in a combat situation.

As for defensive weapons, many of the foreign experts do not consider them obligatory for reconnaissance aircraft. In their opinion, it is enough for the crews to have warning devices which give a danger signal when the aircraft are in the beam of ground or airborne raiders as this would make it possible to promptly execute a defensive maneuver and begin jamming them. Nevertheless certain reconnaissance aircraft do carry weapons. For example, the RF-5E is armed with a 20-mm canon and two air-to-air missiles.

These, in the views of the NATO specialists, are the basic demands on air reconnaissance which would ultimately determine its capabilities and development trends as well as its role and place in the overall reconnaissance system of the armed forces.

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PERCEPTIONS, VIEWS, COMMENTS

U.S. NAVY: FIGHTING SHIPBOARD FIRES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 9, Sep 80 (signed to press 10 Sep 80) pp 72-74

[Article by Capt 1st Rank (Res) A. Ivanitskiy: "Combating Fires on American Ships"]

[Text] American naval specialists have pointed out that with the appearance of nuclear missile weapons the tasks of ensuring the survivability of ships have become significantly more complex. Thus, there is a greater danger of fires which are related to the increased proportional amount of explosive and inflammable materials (ammunition, fuel, lubricants and so forth) carried on the ships as well as to the extended stay at sea.

The ever-increasing cost of the ships has given rise to a natural desire to keep them in service and reduce the amount of damage caused to them.

Regardless of significant achievements in the area of improving fire safety measures, for example, the introduction of automated fire detection and extinguishing systems on the U.S. Navy ships, in recent years the number of fires has increased causing the death of personnel and significant material losses. Thus, the data published in the American press indicate that over the period from January 1969 through August 1977, the U.S. Navy recorded 1,346 fires which caused material losses totaling 169 million dollars.

The largest fire not accounted for in the table [not reproduced] occurred on the nuclear-powered carrier "Enterprise" in 1969. In this instance on an aircraft ready for taking off an aircraft missile accidentally was activated which then hit an aircraft standing on the opposite side. As a result over 40 aircraft were lost and 27 men lost their lives. Many of the personnel sustained wounds, burns and severe poisoning.

The foreign press has pointed out that in actuality the data on the number of fires and the material losses have been significantly understated. Thus, in 1975, the guided missile cruiser "Belknap" collided with the carrier "John F. Kennedy," as a result of which a major fire broke out and this lasted more than 3 hours. On the cruiser the superstructure made from aluminum alloys was completely burned out (Fig. 1) [illustrations not reproduced] and ammunition exploded in the ammunition rooms. However, judging from the materials in the foreign press, the navy specialists who estimated the material losses caused understated this by at least 3-4-fold.

The bad fire safety situation on the Navy vessels caused Congress to convene a special hearing in 1979 on this question. The U.S. General Services Administration prepared a report which pointed out that the basic causes for the outbreak of fires were the failure to observe the fire safety rules by the personnel, their poor training in this area and the bad maintenance of firefighting equipment on the ships. Thus, the personnel had been poorly trained in the practical procedures and methods of extinguishing fires while the drills and exercises to fight them were carried out on the ships, as a rule, under conditions which were far from real because of the danger of accidents and the desire of the command to economize on expendable materials. Moreover, an inspection of the state of firefighting equipment during the period from November 1972 through November 1974 showed that 21-60 percent was not in working order.

In subsequent years the U.S. Navy worked out a classification of shipboard fires and this subsequently has been adopted in the navies of other NATO countries as well.

Class A fires--the combustion of simple materials (wood, paper, textiles and the plating of the hull) accompanied by the appearance of white smoke. These are extinguished by sprayed or focused jets of water (Fig. 2). After the fires have been eliminated, a great deal of cinders and ash remain and these can cause secondary combustion.

Class B fires--the igniting of mixtures of vapors and air forming above the free surfaces of combustible fluids (gasoline, diesel fuel, mazut and paints) accompanied by the appearance of black smoke. These are extinguished by dry powderous substances, by foam, by carbon dioxide, by sprayed water and by "light water." The latter is a mixture formed on the basis of derivative fluorination of ammonium hydrocarbon acids and the salts of aliphatic acids. This mixes well with both fresh as well as outside water and forms on a burning liquid a gas-impermeable layer which prevents secondary combustion.

Class C fires--the igniting of electrical equipment accompanied by the appearance of dark blue smoke. These fires are extinguished mainly by nonconducting fire extinguishing substances such as carbon dioxide and dry powders.

Class D fires--the igniting of easily ignited metals (aluminum alloys, titanium, sodium and magnesium). These are extinguished with Purley-K powder (manufactured on the basis of potassium bicarbonate).

According to information in the foreign press, the resistance of American ships to fires and explosions is ensured by a range of measures including the designed-in fire prevention, the training of skilled specialists, the precise organization of a damage control service on the ships as well as the use of special equipment (stationary and mobile systems and equipment for fire extinguishing, early detection of fires and fire alarms, as well as protective gear for the personnel against high temperatures and toxic combustion products).

The designed-in fire safety is provided by the proper laying out of ship quarters, by the rational placement of the equipment in the quarters and compartments, by the gas-tightness of all fire- and explosion-prone ship quarters and by the use of

fireproof structural elements, noncombustible and refractory structural, insulating and finishing materials. For the purposes of fire safety, American ships are divided by fireproof bulkheads. In hangars there are fireproof curtains for localizing fires.

Particular attention has been given to the fire safety of aviation fuel storage tanks. Thus, the pipelines are of double-walled pipe and the space between the walls is filled with an inert gas. Helicopter gasoline is kept in saddle-shaped tanks which consist of outside, inside and settling sections. Outside water is used for replacing the gasoline.

As thermal insulating various noncombustible materials are used such as asbestos, cement and lime which include various binding components. Fireproof epoxy materials with quartz fillers are employed for covering the flight deck and interior quarters. Recently on American ships combustible curtains, drapery, rubberized carpeting, tableclothes, pillowcases and mattresses have been replaced by analogous ones but made from noncombustible and refractory materials (fiberglass fabric and neoprene).

Great attention has been given to reducing fire damage and increasing the fire resistance of the aluminum alloys which are used to manufacture the superstructures of a majority of modern U.S. Navy ships. Thus, a fireproof fibrous layer and a layer of cotton slag has begun to be used as a protective cover for the aluminum alloys. On all American ships there has been a sharp increase in the capacity of the fire extinguishing systems both in terms of the number as well as the productivity of the fire pumps. This in principle should ensure the rapid elimination of the fires. The water firefighting systems have been reequipped for extinguishing fires using chemical and air-mechanical foams with a high foam-generating factor (100-1,000).

On the guided missile ships, in the quarters where the missiles are tested out, covered-type flame and gas ducts are used if the fuel ignites in the accidental firing of the engine, and in the missile weapon rooms there are systems for spraying water into the missile engines.

For early detection of fires all American ships have smoke and flame detectors as well as photoelectric and thermal ones. Several-score detectors are joined into monitoring units and these also include switches which can activate the corresponding firefighting system and equipment.

At the end of the 1960's, the Navy chief of staff set up a committee to examine the state of carrier safety and an auxiliary research group (for the other classes of ships), and their members made 87 recommendations to improve the fire safety on ships.

In 1973, under the Navy staff a unified permanent consultative group was organized for the collecting and generalizing of data on the combating of shipboard fires, for issuing recommendations and for publishing the results of the scientific research and experimental design work in this area. Its members included representatives of the Navy staff, the chief inspectorate, the staffs of the fleets, the naval center for the development of safety systems and devices, the personnel

training command, the scientific research administration and the scientific research laboratory of the Navy.

For fighting fires on ships, up to eight emergency parties are organized, each of which consists of three groups: assault, containment and support. The first directly fights the fire, the second localizes it, while the third delivers firefighting and additional equipment to the site of the fire.

The emergency parties on aircraft carriers include up to 650 men, including 120 high-class damage control specialists who have completed naval firefighting schools. As a rule, they undergo an extended course of firefighting training. Around 2,700 crewmen participate in brief assemblies where they study the new methods and procedures for fighting fires.

Special equipment for protecting the organs of respiration and vision against smoke and toxic gases is used for the safety of the personnel in the emergency parties to extinguish the fires. The Navy has adopted the A-3 respirator with an operating time of 45-60 minutes, as well as a firefighting suit which provides protection against high temperatures. It consists of an overall with a hood, gloves and boots and is manufactured from an asbestos-cotton fabric with an exterior aluminized cover. For going out on the flight deck from the inside quarters the personnel is supplied with life masks which operate for 8 minutes on compressed air.

Regardless of the measures taken by the U.S. Navy leadership to improve the organization of firefighting, the number of fires, as has been pointed out in the foreign press, not only is not declining but is rising.

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PERCEPTIONS, VIEWS, COMMENTS

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Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 10, Oct 80 (signed to press 10 Oct 80) pp 1-2

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A B-52 Bomber in Midair Fueling
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Articles by Soviet authors and the chronicle were prepared from foreign press sources.

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PERCEPTIONS, VIEWS, COMMENTS

'IMPERIALIST INTRIGUES' IN THE NEAR EAST

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 10, Oct 80 (signed to press 10 Oct 80) pp 7-12

[Article by Candidate of Historical Sciences, Col L. Medichev: "The Intrigues of Imperialism in the Near East"]

[Text] On the threshold of the 1980's, the Near and Middle East has become one of the most dangerous centers of international tension. From the "Near Eastern flank" the militant circles of imperialism are undertaking fierce attacks against the process of detente. The United States, in utilizing Israeli expansionism against the Arab countries, the exacerbation of the situation in the Persian Gulf area as a result of the American-Iranian crisis and the intervention of the foreign counter-revolutionary forces into the internal affairs of Afghanistan as well as the military conflict between Iran and Iraq and other pretexts, is carrying out a policy of expanding aggressive militaristic activities in this region.

The new trends in increasing tension in the Near and Middle East were clearly apparent after the concluding of the separate Egyptian-Israeli deal 2 years ago at Camp David with the direct participation of Washington. In the assessment of foreign specialists, this deal represents an actual abandonment by the United States, Israel and Egypt of the underlying principles for a Near Eastern settlement and which are found in a number of the UN Security Council and General Assembly resolutions. The main demands of the Arabs for the withdrawal of Israeli troops from the territories occupied since 1967 and for respecting their national and sovereign rights have remained outside the "framework" of the illusory peace scheme worked out at Camp David. The so-called right of the Palestinians to "internal autonomy" as mentioned by the participants of the Camp David deal, has turned out in actuality to be the purest fiction.

A separate treaty not only did not create conditions for settling the crisis but on the contrary, poured oil on the still not extinguished fire of the Near Eastern conflict. This can be seen from the intensified armed provocations by Israel against Lebanon, the military preparations of the Israeli military against the neighboring Arab states, the demonstrative declaration of the "united" Jerusalem as the Israeli capital and the mass repressions and punitive operations against the peaceful population on the occupied lands.

American political observers have pointed out that none of the peace agreements of recent decades has been accompanied by an arms race of such scale as the notorious separate Egyptian-Israeli deal which bears the stamp "Made in the U.S.A." Upon the admission of the State Department, in the Near East the United States, for the purpose of strengthening its influence here, has already spent more money than on carrying out the well-known "Marshall Plan." After the conclusion of the Camp David Treaty, Israel, in addition to the almost 2 billion dollars granted annually as credits and subsidies for the purchase of American weapons, was allocated an additional 3 billion dollars, while Egypt was to receive 2.6 billion (in 1979-1981).

What has this deal brought its participants?

In the assessment of foreign specialists, Egypt, in return for the "handful of sand" given back to it under humiliating conditions on the Sinai Peninsula, received a U.S. promise for military and economic aid. Having signed what in essence was an act of surrender, Egypt was completely isolated in the Arab world and made a compact with international imperialism.

The inequality of Egypt as a partner to the deal is emphasized by the fact that the so-called measures to ensure mutual security are far from equal for the two sides. While President Sadat agreed to create extensive demilitarized zones and station American early warning radars on the territory of the Sinai Peninsula, on the other side of the frontier only a small strip up to 3 km wide has been designated where a limited troop contingent should be stationed and no provision is made for analogous radars.

The encroachment on Egyptian sovereignty has also extended to other areas. Diplomatic relations between the two countries were established under the conditions of an Israeli occupation of around one-third of the Sinai Peninsula. Israeli vessels and cargo gained the right to unobstructed passage through the Suez Canal while aircraft have the right to fly freely over the Sinai Peninsula. Moreover, the United States has compensated Israel for the loss of air bases in the Sinai, having already begun to finance the construction of two new airfields in the Negev Desert.

At the same time the separate treaty has unilaterally provided Tel Aviv with military and political gains which even it could not count on. In essence the treaty legalized the Israeli occupation of the West Bank of the Jordan River and the Gaza Strip and provided it with conditions for the further "assimilation" of these regions. The largest Arab country was taken out of the general Arab struggle to eliminate the consequences of Israeli aggression and has actually been turned into a springboard for an offensive against the progressive forces in the region.

Thus, according to a statement in the journal AFRIQUE-ASIE, President Sadat within the framework of the Camp David Treaty concluded with Prime Minister Begin a number of secret agreements on coordinating actions and allocating roles in the subversive activities against the progressive Arab regimes, in provoking border and inter-necine armed conflicts as well as splitting and suppressing the Palestinian Liberation Movement. These agreements imposed quite specific obligations on Sadat and the carrying of them out has already been expressed, in particular, in increased tension on the frontier with Libya, the preparation of conditions for an invasion by Egyptian troops with the aim of altering the existing regime, in the exacerbation

of the situation in Lebanon and the carrying out of terroristic acts against the Palestinian leaders and other actions.

Having voluntarily assumed the role of the policeman in suppressing the national liberation movements in this region, Sadat even before the signing of the separate treaty and without waiting for the arrival of the promised military weapons sent Egyptian servicemen and equipment to Zaire, to the area of the Horn of Africa, the Sudan and Oman--everywhere where immediate support for counterrevolutionary forces was required. In order to prove his readiness to perform police functions, in 1977 Sadat used the Egyptian Army in an armed attack on Libya. He provided bases for American assault troops which carried out the raid against Iran, and at present is providing direct aid to the counterrevolutionary forces of Afghanistan.

The economic and political sanctions of the Arab countries which acted in a united front against the capitulating policy of Sadat intensified Egyptian isolation. The national economy has deteriorated more and more. In 1977, the external debt of Egypt was 12 billion dollars, and at present, when each year imports are almost double exports (the foreign trade deficit in 1978 reached 2.2 billion dollars), its debts in 1979 exceeded 15 billion dollars. Even at the start of 1979, there was an 80 percent devaluation of the Egyptian pound vis-a-vis the dollar and this was the greatest devaluation in all history. "The assertion that the Egyptian-Israeli Treaty could bring prosperity to Egypt," emphasized the statement of the Egyptian National Progressive (Leftist) Party, "is a big lie...."

Nor have the hopes of the Egyptian leadership been realized for implementing the idea of a new Near Eastern version of the "Marshall Plan," or, as it was previously flatteringly termed by the Egyptian press, the "Carter Plan," within which Sadat, according to a statement in the Cairo journal OCTOBRE, hoped to receive at least 20 billion dollars over a 5-year period as a "reward" for his surrender. As it later turned out, neither the United States nor the other capitalist states which along with the International Bank for Reconstruction and Development had created something like an international consortium for providing aid to Egypt had a burning desire to invest money into the national economy which was in the throes of a crisis and was universally boycotted in the Arab world.

Thus the United States did not succeed in breathing life into the "Camp David Peace" and forcing the other Arab countries to support it, and above all Jordan. This can be seen, in particular, from the talks which ended without results in Washington in June 1980 with King Hussein. As was later admitted by the American magazine NEWS-WEEK, "arm twisting was absurd: the Camp David process of settling the conflict was at a standstill."

In line with the obviously stalemated American diplomacy in the Near East, the contradictions between the United States and the Western European allies assumed an evermore acute form. No matter now the White House endeavored to stifle them, they still appeared in the Near East declaration approved by the heads of the Common Market governments and states in June 1980 at an EEC session in Venice. Although the Western European leaders, with an eye on Washington, did not decide to directly condemn Israel and admit the bankruptcy of the "Camp David Peace," they were forced more and more often into making obeisances toward the Arabs.

The United States, in acting as the sole guarantor for carrying out the "peace" treaty, obtained a "legal" basis for increasing its direct and indirect military presence in the region and for further actions in putting together the Washington--Tel Aviv--Cairo militaristic axis. Here foreign specialists have particularly emphasized the opportunity which arose for the Pentagon to have bases here on which they intended to rely in increasing their military preparation and from which they propose to exercise constant control over the entire region of the Near East and contiguous areas, including the southern frontiers of the Soviet Union.

For this purpose, on the basis of the agreements signed with Israel and Egypt, the United States is planning on using both the new Israeli bases being built with American aid in the Negev Desert as well as the Egyptian bases in the Sinai (after the Israeli pullout from there) as well as gain access to their naval installations. These bases, wrote the London journal MIDDLE EAST INTERNATIONAL, will play the main role in the conducting of joint American-Egyptian and American-Israeli maneuvers in the "regions adjacent to the Arabian Peninsula." The U.S. and Egyptian air forces have already conducted such exercises in July-August 1980. Moreover, as the newspaper FINANCIAL TIMES has written, the Pentagon is utilizing Egyptian bases for the stationing of the E-3A airborne warning and control aircraft (the AWACS system). "If the United States," concludes the newspaper, "ever decided to carry out military intervention in the Near East, a significant portion of this operation would pass through Egypt."

Washington has planned to pay the rent for these bases to Israel and Egypt in the form of various military deliveries. Since the amount of American weapons received by Israel and certain other Near Eastern countries clearly surpasses their defense requirements, the surpluses can, in the opinion of foreign specialists, create precisely that essential ready-made arsenal which would be needed in deploying the American "invasion forces" which would be ferried into this region.

According to information in the Israeli newspaper YEDIOT ACHRONOT, Tel Aviv has already given its agreement to supply the Pentagon with the Israeli supplies of weapons and military equipment for operations in the Persian Gulf zone so that the "Rapid Response Corps" which was being organized in the United States would not have to deliver them from overseas. Egypt has also expressed a readiness to have American ground forces, aviation and navy pass over its territory, in particular in line with events in Iran and Afghanistan, in ensuring their supply.

At the same time the weekly BUSINESS WEEK has made it clear that the United States not only conceives of using the air bases in Egypt and Israel but also is counting on conducting operations from other airfields, including Dhahran (Saudi Arabia), Masirah (Oman), Djibouti, as well as gain access to the seaports of Berbera (Somalia), Muscat (Oman) and Mombasa (Kenya). At the listed naval facilities, as the magazine explained, the United States "could ahead of time keep vessels loaded with tanks, artillery and other heavy equipment so that the troops, upon arriving in this region, could immediately use them."

According to a statement in the newspaper WASHINGTON POST, the Pentagon has worked out a new 5-year program for further increasing the American military presence in the Persian Gulf zone and in the Indian Ocean basin. This program provides for the modernization of the military bases in Oman and Kenya and the Egyptian base of

Ras Banas on the shore of the Red Sea. Moreover, there are plans to spend around 1 billion dollars on improving the military facilities on Diego Garcia Island where the B-52 strategic bombers will be based. As a whole, this 5-year plan will cost the American taxpayers 20-25 billion dollars.

The desire to extend the military presence of the United States and its NATO allies in the Near and Middle East, to create stockpiles of weapons there and set up springboards is a particularly clear manifestation of the imperialist essence of the so-called "Carter Doctrine" which was announced at the beginning of 1980 and which again focused on the concept of filling in "vacuums" and "throwing back" the liberation revolutions. The U.S. Administration has endeavored to present this doctrine as an unique response to recent events in Iran and Afghanistan. In actuality the basic elements of this "doctrine" concerning the "U.S. military measures in Southeast Asia were enunciated by the Secretary of Defense Brown even at the start of 1978, that is, 2 years prior to the official announcement of the "Carter Doctrine." At that time he directly stated the nation's readiness for armed intervention into the internal affairs of the states in the Near East and the Persian Gulf zone, if events there were to develop not to the liking of the United States.

In 1979, the United States began to create the "Rapid Response Corps" and the first announcements appeared on the Pentagon's intentions to form a fifth fleet in the Indian Ocean consisting of 2 aircraft carriers and 15-50 ships. According to data in the foreign press, at the end of June 1979, in the White House "special recommendations" had already been worked out for the president on strengthening the American military presence in the region of the Near East and Indian Ocean. The Pentagon was instructed to draw up a plan for the possible use of U.S. armed forces in this area. The plan should provide for the creation of a permanently based fleet in the Indian Ocean, an increase in weapons deliveries "to dependable states in the region and closer military cooperation with them."

However, after the fall of the monarchy in Iran even countries with conservative regimes feared stepping across a certain "threshold of cooperation" with neocolonialism, fearing an outburst by the people and isolation in the Moslem world. The position of Saudi Arabia is indicative in this regard. While not acting in principle against the American military presence in this region, its leadership has stated a reticence for at least the official locating of military bases directly on the territory of the country. A preference was voiced for a so-called "U.S. military presence on the horizon." Other states in the Persian Gulf zone, in particular Kuwait, assumed an even more negative stance on this question.

It is not surprising that under such conditions the United States has begun to rely on creating "miniblocs" under its aegis and unofficial alliances without the direct involvement of the imperialist powers. Such alliances, as the "Carter Doctrine" states, are being planned within the so-called "framework of consultative security and cooperation" with the participation of the Afro-Asian countries with an increase in direct military presence of the Western states and the creation of the corresponding support facilities. Thus, in the estimate of foreign specialists, certain adjustments are being made in the base policy. Now they have proposed to rent facilities without the stationing of numerous military garrisons there as they could have an "irritating effect on the indigenous population." The facilities are planned to be used as naval anchorages and transloading-transit points as well as

for the purpose of the stockpiling of the necessary weapons and military equipment for the "Rapid Response Corps" and other American troops.

Among the possible situations which might trigger the "invasion forces," such variations are envisaged as the outbreak of "internal disorders in vitally important regions for the United States," a blockade of the basic oil supply routes of the West and the "invasion of enemy forces." There are also two possible basic scenarios. One envisages as the "most favorable condition, the appeal by a certain oil-producing country in the Near East with a request for U.S. aid," while the second considers the less favorable but more probable circumstances when, without waiting for any summons, it is essential to respond quickly to a direct threat." In a special report prepared by the research department of the U.S. Library of Congress and entitled "The Use of American Armed Forces for Ensuring Oil Deliveries from the Persian Gulf Region," it is stated that such circumstances "of course could lead to the creation of a much more complicated situation with the possibility of an escalation to an all-out nuclear war." In other words, it is fully assumed that the "Rapid Response Corps" could trigger the starting of not only a local but also a global war.

As was emphasized by the USSR Minister of Defense, Mar SU D. F. Ustinov, the formation of the 100,000-strong "Rapid Response Corps" and the deployment of a permanently stationed fleet in the Indian Ocean are one of the manifestations of the dangerous policy of continuously increasing the NATO and U.S. weapons aimed against the Soviet Union and the other peace-loving countries.

"The security of the Arab states and peoples," stated the General Secretary of the CPSU Central Committee and Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev, "is threatened by those who attempt to impose a predatory plunderous compact on them, by those who blackmail them with their military bases and send naval vessels to their shores, by those who use the conflicts in this region for their own selfish aims." New proof of this is the dangerous intrigues and militaristic machinations of the imperialists over the military conflict between Iraq and Iran. They are endeavoring to deal a crushing blow to Arab unity, to utilize each of the belligerents for their own purposes and regain their dominance in Iran.

The aggressive intrigues of the U.S. imperialists and their puppets in the Near East, in creating a direct threat to the cause of peace and having an anti-Soviet focus, demand that the Soviet military constantly raise its vigilance and combat readiness.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: MILITARY STANDARDIZATION DEVELOPMENTS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 10, Oct 80 (signed to press 10 Oct 80) pp 12-19

[Article by Engr-Col I. Belov: "Military Standardization in NATO"]

[Text] Having set out to exacerbate the international situation and intensify confrontation with the socialist countries, the leading circles of the United States and NATO have continuously intensified the arms race and have endeavored to achieve military superiority over the Soviet Union and all the Warsaw Pact states. For attaining these objectives they have made extensive use of various opportunities, including military standardization which is seen as an important tool for further increasing the military might of the aggressive North Atlantic Alliance. In recent years the U.S. President Carter and Secretary of Defense Brown have been particularly active in this area and they view standardization as a source of enormous profit for the American monopolies and a very effective means for strengthening U.S. political influence in NATO and for controlling their partners in the bloc.

The frank intentions of the United States as well as the adventuristic policy of the American government could not help but cause among the European countries in the bloc alarm, argument or a boycott of the measures proposed by the United States in the area of standardization. This shows, as is emphasized in the foreign press, their desire for independence from the United States in the weapons area.

The European NATO countries which for a long time have been flooded by American weapons and military equipment have begun to announce their equal status with the United States in the development and production of weapons and demand equal weapons trade (according to the so-called "two-way street" principle) from the United States which considers the "buy American" principle the cheapest and fastest path to standardization. However the demands remain demands and as yet the situation has changed slowly, although in certain areas a dependable barrier has been put up against American deliveries to Western Europe. In actuality the path has been blocked for tanks and other armored equipment which are being replaced by West German models, while the deliveries of airplanes, helicopters, antitank guided missiles and surface-to-air guided missiles [SAM] have also declined substantially. But still the European countries of the bloc continue to depend heavily on the United States in the weapons area, particularly in equipping modern weapons systems with electronics. As the foreign press has asserted, weapons trade between these countries up to now is carried out in a ratio of more than 10:1 in favor of the United States.

Thus, in the 1970's the United States exported 8 billion dollars worth of military supplies to these countries but imported only 700 million dollars worth from them.

Since the economic and technical capabilities of each of the European NATO countries individually is significantly lower in comparison with the United States, among these countries in recent years a tendency toward a pooling of efforts can be noted on the questions of the development and production of weapons. However, this is more often restricted to the limits of two or three basic Western European states (the FRG, Great Britain and France). This cooperation often has an anti-American nature, although this is concealed.

The content of military standardization in NATO. Military standardization in NATO is understood as a broad range of measures aimed at ensuring joint and most effective operations by the coalition armed forces of the bloc on the basis of utilizing unified concepts and procedures in the activities of the troops and the staffs, as well as for the weapons and supplies.

The leadership of the bloc feels that weapons standardization can be complete and partial, and the former envisages the adopting by all the NATO countries of unified systems of weapons and military equipment, the coordinating of research and development, the allocating of orders and production, as well as the use of money allocated for these purposes.

In recent years, NATO has introduced the concept of interoperability which is defined as a commonness of views and a unity of actions, the ability of the armed forces, formations, units and weapons systems to act jointly to achieve common objectives, as well as mutual ensuring of the combat readiness of the troops and weapons systems. Interoperability is aimed not at creating standard models of weapons and military equipment for NATO but rather at their interchangeability and compatibility, the adapting of all models in use and in development for employing standard ammunition and fuels and lubricants, the introduction of interchangeability in the most frequently failing parts, assemblies and units as well as their mutual supply to the allied troops. In the weapons area, as has been pointed out in the foreign press, interoperability actually means the simplest form of standardization.

NATO has also introduced the concept of operational interoperability which includes the unification of the organizational structure of the troops, the basic operational documents, regulations and manuals, the working out of standard procedures and programs for the combat and operational training of troops and staffs, the standardizing of ammunition and fuels and lubricants and the creation of sufficient stockpiles of them in regions of probable combat operations.

Interoperability in the control and communications system is the ability of two and more components in the given system to transmit instructions and information in a satisfactory manner. In the opinion of specialists of the bloc, this should provide dependable control of the troops from the different member countries, their cooperation, communications between staffs and so forth. It is planned to achieve this by utilizing standard frequencies and current voltages or by employing dependable converters and transfer devices.

The standardization of weapons and troop support systems, as the NATO leadership feels, should be based upon uniform military strategic concepts, that is, common views on the nature of a future war and the methods of waging it. In accord with these the uniform requirements for weapons and military equipment must be worked out. The use of long-range planning is also considered very important, and has been pointed out in the foreign press, this is extremely lacking at present in NATO.

The leading NATO bodies concerned with the standardization problems. The overall decisions on standardization questions are taken by the NATO Council (if they are of a political nature) or by the Military Planning Committee (in the military area). Through the General Secretariat and the personnel of the International Secretariat of NATO they organize work in implementing the designated programs and supervise the course of carrying out the approved decisions.

The NATO Military Committee is an important element in the area of military standardization. Its basic working body--the International Joint Staff--jointly with the staffs of the supreme and high commands of the bloc as well as with the Military Standardization Bureau, elaborates the military strategic concepts, the overall principles for conducting combat the operations, the requirements for the standard models of weapons, the uniform provisions for the regulations and manuals published in the member countries as well as documents of an operational nature which regulate the combat employment of the troops. It works out the demands on standardization in the area of control and communications and the combat and rear support of the bloc's troops. The Military Standardization Bureau is also responsible for working out the corresponding standardization agreements in NATO.

The basic NATO body which actually implements the measures in the area of weapons and military equipment standardization is the conference of directors on armaments of the member nations with its subordinate more than 140 various committees, groups and subgroups. Among them are the following groups: For the weapons of the ground forces (with 25 subgroups under it), air force weapons (16 subgroups), air defense weapons, naval weapons (33), for scientific research questions (34), for communications and radio electronics (25), for standardization, codification and quality assessments as well as a consultative military industrial group (with 4 subgroups). The conference of directors has under it 18 committees for carrying out specific weapons systems projects. The groups and subgroups as well as the committees are formed from specialists in the area of equipment and tactics. They work closely with the Military Standardization Bureau.

In implementing the standardization programs in the area of rear services support, an important place is given to the control of repairs and the supply of spare parts with an agency of the same name under it. They collect orders from the NATO countries for weapons and spare parts, they place the orders for their manufacturing with the appropriate enterprises and they organize the overhauling of the equipment, the storage and centralized supply of spare parts. The centralization of these processes, as the Western press has pointed out, provides a significant (50 percent) reduction in the cost of the ordered weapons and spare parts and their more efficient delivery to consumers. The Agency for Repairs and Spare Parts Supply employs around 900 persons. Under it are a supply center, warehouses and shops.

The problems of standardizing control and communications equipment are settled in all the above-named bodies, but they are worked out finally at the NATO administration for the joint communications system. Certain other bodies of the bloc are also involved with standardization questions.

The NATO Eurogroup and the European Programming Group (France is also a member of the latter) now hold a significant place in military standardization in the North Atlantic Alliance. A majority of the standardized types of weapons in NATO is presently created within these two groups.

Within the Eurogroup there are seven groups: the group of directors on armament of the member countries, the long-range planning group, the military training group, the group for troop organizational structure, the communications group, rear services support group and the military medical support group.

The present status of standardization in NATO. The leading circles of the United States and the North Atlantic Alliance feel that as a result of duplication in the development and production of weapons, the member nations unproductively spend over 10 billion dollars a year. The former Supreme Commander-in-Chief of the Joint NATO Armed Forces in Europe, the American Gen Goodpaster, asserted that shortcomings in weapons standardization and in the coordination of troop operations reduce the combat capability of the armed forces of the bloc by at least 30 percent. In the opinion of the commander of the NATO mobile ground force: the combat deployment of the mobile forces of the bloc now requires twice as much time as would be necessary in the event of standardizing the weapons and the procedures of troop activities.

The former assistant secretary general of NATO, the American Tucker, feels that in NATO one-half of all research and development in the weapons area is duplicated. In his opinion, the United States duplicates virtually all the developments carried out in Western Europe, since the Americans consider European weapons to be insufficiently advanced and often do not want to have them in the American troops. Tucker has stated that the seven NATO countries in the first half of the 1970's planned to develop six different tactical communications systems, but even two of them could not maintain contact between each other and neither could be connected directly to the NATO unified communications system.

Until recently, as the foreign press has stated, the ships and aircraft of any nation of the bloc could not be refueled outside its own bases due to differences in the design of the fuel intakes and differences in the employed grades of fuel. This particularly related to American aircraft in Europe.

A rather gloomy picture in the area of NATO standardization was sketched out by the adviser of the U.S. Defense Department, Comer, in stating: "How can the NATO command make optimum use of the armed forces of the member countries if their radio communications are unable to use each other's frequencies, if the bombs do not fit the aircraft, the shells do not fit the artillery weapons and there are difficulties in reading each other's maps?" The nations of the bloc, he pointed out, plan, organize, train and arm the troops on a narrow national basis as if each of them intended to conduct a war alone against the common enemy.

As was stated by the foreign press, in 1977, in just Central Europe the NATO armed forces had 32 types of combat aircraft and a majority of them was of the same class. There were 7 types of tanks, 8 types of armored personnel carriers, 22 types of antitank weapons and 13 types of close combat weapons. In the navies of the bloc's states at that time there were 100 types of large ships, 36 types of fire control systems, 8 types of shipboard SAM systems and 40 types of shipboard artillery units of 30-mm caliber and over. In the armed forces of the member countries, as the foreign specialists feel, there are least 100 different types of missiles. The former chairman of the bloc's Military Committee, the West German Gen Steinhof, in giving such information, stated that "NATO today looks like an army museum."

At present, as has been stated by the journal NATO'S FIFTEEN NATIONS, each year the North Atlantic Alliance carries out one project for weapons standardization, but a total of over 300 such projects have been proposed and 600 various agreements have been signed but they are not being carried out. The journal PROCEEDINGS, on this question, has written: "Everyone in NATO recognizes the necessity of standardization but no one wants to carry it out."

The flimsiness of the programs for extensive weapons standardization in NATO was demonstrated with particular vividness in recent years in line with the attempt by the United States, the FRG and Great Britain to develop a basic NATO combat tank. This idea was doomed from the very outset. The Western press commented ironically on this question that instead of a tank they had developed interchangeable caterpillar tracks but of varying design while the prospects of creating a standard tank had now been moved back to the end of the century.

The above-given statements by U.S. and NATO official representatives, of course, must not be understood to mean that the North Atlantic bloc has done nothing and is doing nothing in the standardization area. These very gloomy appraisals were published several years ago and obviously they excessively dramatize the situation for the purpose of putting pressure on the bloc's nations to gain greater agreement from them on the given questions. At the same time they actually reflect the situation that in the area of developing standardization in NATO their actually are significant difficulties caused by the U.S. attempts to fully capture the weapons markets the mistrust toward the United States on the part of its European partners and the desire of each country, as was commented by the journal AVIATION WEEK AND SPACE TECHNOLOGY, to develop, produce and sell their own weapons.

Although the pace of standardization does not satisfy the ruling circles of the bloc, however the measures carried out by them have made it possible to widely distribute many types of weapons.

The U.S. and NATO leadership has endeavored to raise the standardization questions at all meetings and forums. The importance of solving this problem in recent years has been emphasized in the final communiques of all the sessions of the NATO Council and the meetings of the Military Planning Committee. Weapons standardization has been included as one of the basic tasks in the long-range military program adopted by the bloc in 1978 for the next 15 years. Attempts are even being made to involve the European Parliament and Common Market in solving this problem. The American government has organized under the U.S. Congress a special committee for standardization and interdependence in NATO. As can be seen from what has been

said above, the militarists of the West are undertaking every measure to speed up the solution of standardization problems in the North Atlantic Alliance.

The policy of interoperability. Until recently, the U.S. and NATO leadership posed the tasks of carrying out full standardization in the bloc. However, due to the impossibility of achieving complete unification of the weapons, these aims were unrealistic. For this reason in this area the tasks have now been somewhat narrowed and a policy of interoperability has been set. This envisages, as was pointed out above, the use of standard concepts and procedures as well as *partially* standardized weapons and military equipment.

In recent years the bloc has carried out a broad range of measures to standardize the operational activities of the troops. In particular, common views have been worked out on conducting combat operations for all types of the armed forces. Moreover, special operational documents have been prepared for the combat use of the armored troops, the air defense weapons and for the mobility of the units and subunits on the battlefield. A large number of agreements has been worked out on standardization in the area of conducting combat operations and troop support. On the basis of them demands have been worked out on the standardizeable armaments.

As the foreign press has announced, partial standardization of weapons is carried out by different methods. At present, the most important area is felt to be the introduction of standard calibers and ammunition for the basic weapons systems, and standard fuels and lubricants and fueling equipment for the various types of military equipment. Moreover, attempts are being made to standardize certain assemblies, units and parts, armored combat vehicles as well as equipment for suspending ammunition on aircraft. As the foreign press has announced, the American aircraft stationed in Europe in recent years has been reequipped for the use of European fuel, although upon return to the United States they will be readapted for the American grades of fuel and lubricants.

The types of weapons and military equipment developed and produced jointly by two or more states of the bloc, adopted in several member nations as a result of their purchasing of prototypes or licenses for production as well as those produced jointly with the developer countries are also considered to be standardized in NATO (or NATO ones). Examples of such standardization could be, in particular, the Tornado aircraft (developed and flown in the FRG, Great Britain and Italy), Alpha Jet (the FRG and France), Jaguar (Great Britain, France), the F-16 (U.S. development and sold to Belgium, the Netherlands, Denmark and Norway which, together with the United States, are partially involved in their production), the surface-to-surface Lance guided missile (developed in the United States and delivered to a number of countries in the bloc), the Leopard-1 tank (developed in the FRG and supplied to many NATO countries; Italy also produces it under license). An attempt has even been made to create a standard NATO frigate (the FRG and the Netherlands).

Some of the most widely-found types of weapons in NATO are given in the table [see next page] from which one can see that the United States as well as the FRG, Great Britain and France are the basic suppliers of weapons and military equipment. Here one can note a tendency toward separation in developments, on the one hand, by the United States, and on the other, by the designated European countries. The foreign specialists view the given fact as an essential weakness in such standardization,

Types of Most Widely-Found Weapons in the NATO Countries

Name of Weapons (developing country)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ground Forces														
Lance guided missile (USA)	*	*	*		*		*	*						
Leopard-1 tank (FRG)			*		*	*	*	*		*	*			
M48 tank (USA)	*		*								*	*	*	* ¹
175-mm self-propelled artillery mount M107 (USA)	*	*	*		*		*	*					*	*
155-mm self-propelled artillery mount M109 (USA)	*	*	*		*	*	*	*		*	*		* ¹	
203.2-mm self-propelled artillery mount M110 (USA)	*	*	*		*		*	*					*	
155-mm howitzer FH-70 (jointly)		*	*		*									
155-mm self-propelled artillery mount SP70 (jointly) ²		*	*		*									
Milan antitank guided missile (FRG, France)		*	*	*			*						*	*
Tow antitank guided missile (USA)	*		*		*	*	*	*		*	*	*	*	*
SS-11 antitank guided missile (France)			*	*	*								*	*
Roland antiaircraft missile complex (FRG, France)	*		*	*			* ¹				* ¹		*	
Red Eye SAM (USA)	*		*							*			*	
Gepard antiaircraft self-propelled artillery mount (FRG)			*				*	*						
Lynx helicopter (Great Britain, France)		*	*	*		*	*	*		*				
M113 armored personnel carrier (USA)	*		*		*	*	*	*		*	*	*	*	*
Air Forces														
Aircraft:														
F-104 (USA)	*		*		*	*	*	*			*		*	*
F-4 (USA)	*		*				*						*	*
F-5 (USA)	*				*		*	*			*		*	*
F-16 (USA)	*						*	*		*	*			
Tornado (jointly)		*	*		*		*	*						
Sidewinder air-to-air guided missile (USA)	*		*	*	*		*	*		*	*	*	*	*
Sparrow air-to-air guided missile (USA)	*	*	*		*								*	*
Nike Hercules SAM (USA)	*		*		*		*	*		*	*		*	*
Hawk SAM (USA)	*		*	*	*		*	*		*			*	
Air defense radar (jointly)	*	*	*	*	*		*	*		*	*		*	*
Naval Forces														
Torpedoes (USA)														
Systems:														
Harpoon guided missile (USA)	*						*			*				*
Exocet guided missile (France)		*	*	*									*	
Sea Sparrow antiaircraft guided missile (USA)	*				*	*	*	*		*	*			
Tartar antiaircraft guided missile (USA)	*		*		*		*			*				
ASROC ASW guided missile (USA)	*		*		*	*								*

¹Ordered; ²Undergoing testing.

Key: 1--United States; 2--Great Britain; 3-- FRG; 4--France; 5--Italy; 6--Canada; 7--Belgium; 8--Netherlands; 9--Luxembourg; 10--Denmark; 11--Norway; 12--Portugal; 13--Greece; 14--Turkey.

as it does not reduce the diversity of weapons in the bloc but rather leads to an exacerbation of competition and consequently to contradictions between these countries. It also eliminates the small countries of the bloc from scientific thought and advanced technology and this causes dissatisfaction among them and impedes standardization as a whole. Aside from those given in the table, there are of course other types of weapons which are widely found in the bloc. For example, around 9,000 different tanks are equipped in actual terms with a single-type 105-mm canon, many countries of the bloc have adopted the Dutch M58 machine gun, and so forth.

A number of major joint projects is planned in NATO in the next few years. The FRG, Great Britain and France have decided to set up an international consortium for the development and production of guided missiles and primarily antitank guided missiles which will replace the presently-used Hot, Swingfire and Tow. These same countries are jointly developing a European fighter bomber to replace the Phantom F-4 aircraft in the FRG and the Jaguars in Great Britain and France in the future. It is expected that this new aircraft will be in service in 1991-1992. They also together with the United States plan to participate in producing the new American salvo-firing rocket system the MLRS.

The United States, the FRG, Great Britain, Italy, Belgium and the Netherlands are setting up an international consortium for the joint production of the American Copperhead guided artillery shells.

The FRG and France are conducting talks on the joint development of a new tank to replace the Leopard-1 and AMX-30 tanks in the future. The FRG, France, Belgium, the Netherlands, Denmark and Greece in the next few years plan to purchase the American Patriot SAM for replacing the present Nike Hercules SAM. In 1978, the nine European NATO countries concluded an agreement with the United States on their participation in the development of an American global navigation system designed for use by all the armed services and weapons systems. It is planned to be completed in 1988.

As can be seen from the given information of the foreign press, NATO has markedly intensified work in the area of weapons standardization and is preparing a number of major joint projects.

All the standardized types of weapons and military equipment are ordinarily turned over for centralized maintenance, repairs and spare parts supply to the bodies of the bloc. However, there are exceptions to this rule. For example, the deliveries of the West German Leopard-1 tanks and the spare parts for them are carried out directly by the supplier in accord with a bilateral agreement without the involvement of the NATO bodies. The United States also supplies many types of weapons in this manner.

Interoperability also envisages the coordinating of the tactical procedures and methods in the activities of the troops and the staffs and the standardizing of terminology. NATO is presently giving great attention to working out uniform tactics for employing helicopters against tanks, the methods for collecting reconnaissance information and the exchanging of it and automatic data processing. At the center of attention of the bloc's leadership are the tasks of organizing control

over the coalition troops and their cooperation. For successfully solving these problems the Bundeswehr command considers that multinational formations should not be set up below the divisional level, and it would be best, in its opinion, to have them within the corps.

NATO makes it a practice to exchange students of military schools and visits to subunits. Interoperability also provides for the servicemen of each country to study the tactics, weapons and uniforms of the troops of their partners in the bloc and together with whom they must operate under combat conditions. The staffs are entrusted with the constant exchange of information with their allies. In 1979 the Eurogroup started joint pilot training under standard programs, in particular, for the questions of conducting aerial combat and attacking ground targets. The problems of conducting combat and an operation by coalition troops are also worked out at numerous exercises and maneuvers.

In 1979, NATO, as was announced by the foreign press, approved the "Mutual Supply Act" which prescribes the concluding of agreements and contracts within the limits of interoperability for supplying the troops of another country in the bloc with everything necessary during the time of exercises and in the event of war. In accord with this document each country is obliged to provide the troops of the United States and the other NATO countries with fuel and ammunition, service aircraft and tanks, quarter and provide food for the personnel of these troops, and employ its citizens for receiving military cargo at airfields and ports as well as for escorting them to the destination, warehousing and maintenance areas. Moreover, it has been ordered that the American depots in Europe are to be guarded and the U.S. troops are to be freed from the functions of the maintaining and servicing of the bases so that they could concentrate their efforts on combat activities.

Within interoperability, an important place is assigned to the study of foreign languages by the officer personnel. It is a question primarily of English which is (along with French) the official NATO language. In many of the member countries the studying of this language is obligatory for the officers. The American servicemen must study the language of their host country. Around 40 hours are allocated for their linguistic training, while brigade and battalion commanders before being sent off to Western Europe take a course of instruction in a special language school. Sports measures under the "contact" and "partnership" programs are also widely used. In addition, junior officer and soldier clubs are organized and special dictionaries and phrase books are published. The aims in the study of foreign languages remain limited but the personnel should understand each other and be able to make themselves understood. All of this is aimed primarily at one goal, that is, to create the necessary prerequisites for organizing reliable cooperation and carrying out precise control of the coalition troops on the battlefield.

Thus, standardization in NATO encompasses a broad range of measures and involves virtually all aspects of the bloc's activities. The militaristic circles of the United States and the North Atlantic Alliance see in standardization a substantial additional source for further increasing the combat capabilities of the armed forces of the bloc and for this reason are undertaking every effort to speed this up.

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PERCEPTIONS, VIEWS, COMMENTS

NATO: LASER RANGEFINDERS

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 10, Oct 80 (signed to press 10 Oct 80) pp 35-39

[Article by Candidate of Technical Sciences Engr-Col E. Prikhod'ko: "Laser Rangefinders"]

[Excerpts] The aggressive circles of the NATO countries, in not abandoning the attempts to achieve military superiority over the Warsaw Pact states, are continuing to saturate their ground forces with new types of weapons and military equipment, in particular laser rangefinders. Foreign specialists explain the extensive use of these instruments combined with infantry and artillery weapons and their mass use in reconnaissance subunits and on armored combat vehicles by the high accuracy of determining range, by the high speed and simplicity of operation.

At present the capitalist countries have developed a large number of laser rangefinders for various military purposes. Their basic specifications are given in the table [tables and illustrations are not reproduced].

As is pointed out in the foreign press, a further improvement in the laser rangefinders will be carried out in the following areas:

1) The development of unified rangefinder modules suitable for fitting into the optical and electronic-optical sights and observation instruments of various sorts as well as for autonomous use. An example of such a development would be the experimental model of the small-sized module TCX-107 (Fig. 5) for future laser rangefinders. It was developed by the French Gilas and Sapelem firms, it has dimensions of 250 x 110 x 80 mm, it weighs 2.5 kg and is designed to be connected to a control and display unit as well as to a ballistic computer. The range of the TCX-107 is 150-10,230 meters, the accuracy of measurements is ± 10 meters, the rate is up to 12 measurements per minute and the radiated wave length is 1.06 micrometer.

2) The use of complicated electronic circuitry which increases the reliability of the measurement results. In the rangefinders of combat vehicles extensive use has been made of the measurement and depicting of the range values on the indicators simultaneously for up to two objects located in the line if a laser beam is returned from them. In individual models, for example, the laser rangefinder produced by Barr and Stroud, the first or following returned signal is recorded and

in the field of vision an ellipse is illuminated with the dimensions of the silhouette of a standard tank visible at the measured range.

3) A reduction in the overall dimensions and weight of the rangefinders by employing more economic lasers based on yttrium-aluminum garnet with neodymium and modern electronic components. Thus, the American firm International Laser Systems has developed the LRR-104 laser rangefinder weighing 540 grams to be used by artillery observers. The great compactness of the Norwegian LP7 laser rangefinder is achieved, in addition, by saving the electric power of the built-in battery; here the power is delivered just before the measurement by pressing the corresponding button and the measurement occurs at the moment of its release.

4) The use of laser radiation from the rangefinders for carrying out other missions. For example, the English Ferranti firm has developed a laser rangefinder with a range up to 10 km and an accuracy of 15 meters. This can be used for target designation by briefly illuminating the selected target with a beam with a pulse recurrence frequency of 10 or 20 hertz.

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PERCEPTIONS, VIEWS, COMMENTS

U.S.: MODERNIZATION OF B-52 BOMBER

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 10, Oct 80 (signed to press 10 Oct 80) pp 53-56

[Article by Engr-Col R. Danilov: "Modernization of the American B-52 Bomber"]

[Excerpts] The B-52 heavy strategic bomber, the Stratofortress, in being designed for combat operations using both conventional and nuclear weapons, began to be delivered to the Strategic Air Command of the U.S. Air Force in 1955. Series production of various modifications of the bomber continued until 1962. As a total 744 aircraft were built, including: 56 B-52A and B-52B aircraft, 35 B-52C, 170 B-52D, 100 B-52E, 88 B-52F, 193 B-52G and 102 B-52H. All these modifications differ in terms of power plants, the capacity of the fuel tanks, the composition of equipment, certain design changes and the amount of the maximum take-off weight. As has been announced in the foreign press, at present 356 B-52D, G and H bombers are in operation (142 B-52s of various modifications are kept in the reserves). The tactical and technical specifications of the aircraft, as drawn up from materials in the foreign press, are given in the table [table and illustrations not reproduced].

The strategic B-52 bombers participated in the U.S. aggression in Southeast Asia from June 1965 through August 1973. The foreign press has pointed out that initially they were used only over South Vietnam and just over those areas where an effective air defense system was lacking. However with the start in escalation (1972) the B-52s began to make barbarous raids on the territory of North Vietnam. According to data published in the Western press, over the 8-year period of combat operations these aircraft made 126,615 combat sorties and dropped 2,633,035 tons of bombs on Vietnamese territory (during the entire World War II bomber aviation of the Royal Air Force dropped 955,044 tons of bombs).

The aircraft of the B-52D, E, F and G series carried out missions basically at night and under instrument flying conditions. Here they made raids in groups (of three aircraft each) and dropped the bombs in salvos at a speed of over 880 km per hour (each carried a bomb load weighing around 27 tons). The bombing altitude was in the limits of 8,500-11,000 meters. In this instance the bombs covered an area of approximately 2,000 x 1,000 meters and in the event of even a one-second delay in the dropping fell several hundred meters long. As was stated by one of the members of the Committee for Armed Forces Affairs of the U.S. House of Representatives, the B-52 bombers were never adapted to making precision bomb strikes if here provision was not made to use auxiliary ground navigation equipment.

The B-52 is an all-metal monoplane with a high-mounted swept wing (angle of sweep 35°), eight turbojet engines and a bicycle-type landing gear (Fig. 1). The crew consists of six men: the 1st and 2d pilots, the navigator-operator of the radio navigation equipment, the navigator-operator of the weapons system, the operator of the electronic countermeasures equipment and a gunner. The pilots, the operator and the gunner are located on the upper deck, and the two navigators on the lower one. The forward pilot's canopy has heat-protective blinds against thermal radiation in a nuclear explosion.

The power plant of the aircraft has undergone significant changes in the process of its operation. All the modifications of the B-52 are equipped with turbojet engines with a thrust of from 4,500 kg (the B-52A) up to 6,240 kg (the B-52G), while the aircraft of the last modification (the B-52H) are equipped with turbofan engines with a take-off thrust of 8,200 kg. The fuel is carried in fuselage tanks (174,130 liters) and two auxiliary tanks (2,650 liters each) located on pylons under the outer wings. All B-52 aircraft are equipped with a midair fueling system (see the colored insert).

The foreign press has pointed out that after modernization a B-52 bomber will be capable of carrying 20 cruise missiles or a combination of AGM-86B and SRAM missiles. Each pylon weighs 2,270 kg and in terms of dimensions is similar to the fuselage of a F-16 aircraft. After releasing the missiles the pylons can be dropped since they create significant drag in flight.

Simultaneously with the reequipping of the B-52 bombers as carriers of cruise missiles, a program is being carried out to modernize the electronic equipment as well. In accord with this all the B-52G and H aircraft which are in service should be equipped with a new radio electronic system which, as the American specialists assume, will raise the accuracy of navigation and the delivery of the weapons to the drop point by 30-40 percent. Moreover, there are plans to increase the reliability and facilitate the maintenance of the new onboard equipment. From the improvements made in the equipment, they intend to reduce the overall weight of the B-52G bomber by 820 kg and the B-52H by 860 kg.

According to information in the Western press, initially there were plans to equip one B-52G aircraft with a complete set of the new radio electronic equipment and conduct 12-month flight tests in 1981. Subsequently there are plans to study the influence of damage on the rather old design of the B-52 aircraft and the possibility of installing extensions on the leading edge of the inner wing. According to the calculations of American specialists, these extensions can significantly increase the capacity for carrying fuel and, in addition, improve the joining of the wing to the fuselage. This will reduce drag and improve the quality and, consequently, the range of the aircraft's flight.

In the second stage of the program there are plans to install on the aircraft a new forward-looking radar with a phased antenna array, a radar processor, a second radio altimeter, equipment for protecting the compartments with radio electronic equipment against exposure to nuclear radiation, as well as a digital flight control system and a modified navigation and bombing system. This would make it possible to reduce the number of crew members to five men. Both stages of the program are to be completed in 1986.

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PERCEPTIONS, VIEWS, COMMENTS

U.S.: B-1 BOMBER AS CARRIER OF CRUISE MISSILES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 10, Oct 80 (signed to press 10 Oct 80) pp 57-58

[Article by Engr-Col V. Kirsanov: "The B-1 Aircraft as the Carrier of Cruise Missiles"]

[Text] The U.S. military industrial complex is continuing to intensify the arms race, here giving particular attention to the development of strategic weapons systems. Judging from announcements in the foreign press, the further improvement of strategic aviation in recent years has been linked by the Pentagon to plans for equipping the B-52 bombers with cruise missiles. These missiles are viewed as the basic means for increasing the combat capabilities of strategic aviation.

At the same time other variations are being examined for developing aircraft which would carry the cruise missiles. Recently the American press more and more often has been mentioning the B-1 bomber the series production of which had been planned for 1977 but was temporarily halted.

Certainly, in accord with the demands of today it is a question not merely of resuming series production of the B-1 bomber but rather creating a new aircraft based on it, a carrier for cruise missiles. The American journal AVIATION WEEK AND SPACE TECHNOLOGY has written that the Rockwell firm, upon its own initiative, has already carried out extensive research during which they studied the possibility of developing a new, cheaper aircraft based on the B-1 bomber and capable of carrying up to 30 cruise missiles. These efforts by the firm were supported by the Pentagon which hurried to conclude a 4-million dollar contract with it to continue the research.

According to statements in the Western press, the new aircraft will have almost complete external similarity to the B-1 (see the photograph) [illustrations not reproduced]. The basic changes would occur in the design of the wing. It would be a conventional wing with a sweep angle along the leading edge of 25°. This, in the estimates of the firm's specialists, would lead to a reduction in the maximum speed of the aircraft to high subsonic. At the same time, in their estimates, the speed of the bomber at low altitudes (and this is particularly important for crossing air defense systems) will be insignificantly reduced (from $M = 0.85$ to $M = 0.8$). Changes are also planned in the design of the bomb bay. Instead of three there will be just two bomb bays designed to hold 8 cruise missiles on each revolver-type launcher. Another 14 missiles will be suspended on external assemblies on the

bomb bay doors (10 on the forward and 4 on the rear). This will lead to a reduction in the flying height of the aircraft (from 21,000 to 12,600 meters).

Specialists from the Rockwell firm feel that the use of the conventional wing and, consequently, the absence of a complicated turning mechanism will make it possible to substantially simplify the design of the bomber and reduce its overall weight. In addition there are plans to revise the composition of the onboard radio electronic equipment. This will also lead to a reduction in the necessary expenditures. In the estimate of the American press, the realization of the above-listed changes will make it possible to reduce the cost of the B-1 to 43.3 million dollars.

As has been pointed out in the foreign press, even under the condition that Congress allocates the necessary funds for the program to develop the new version of the B-1 bomber under the budget of the 1980-1981 fiscal year, demonstration tests for the aircraft would scarcely begin earlier than the spring of the next year. The plans of the Air Force command are to turn over up to 100 new missile-carrying aircraft to the SAC units by 1987, and with these planes the Pentagon plans not only to substantially replace the aircraft fleet but also significantly raise the combat capabilities of strategic aviation.

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